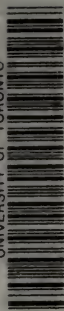


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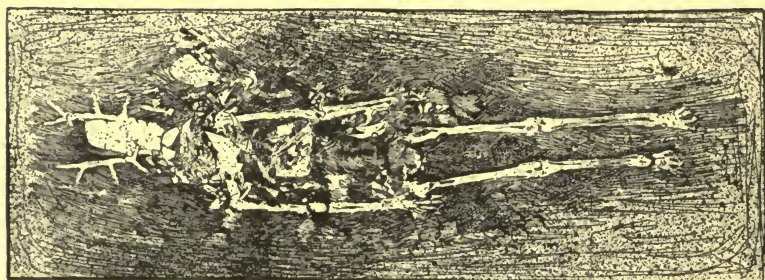
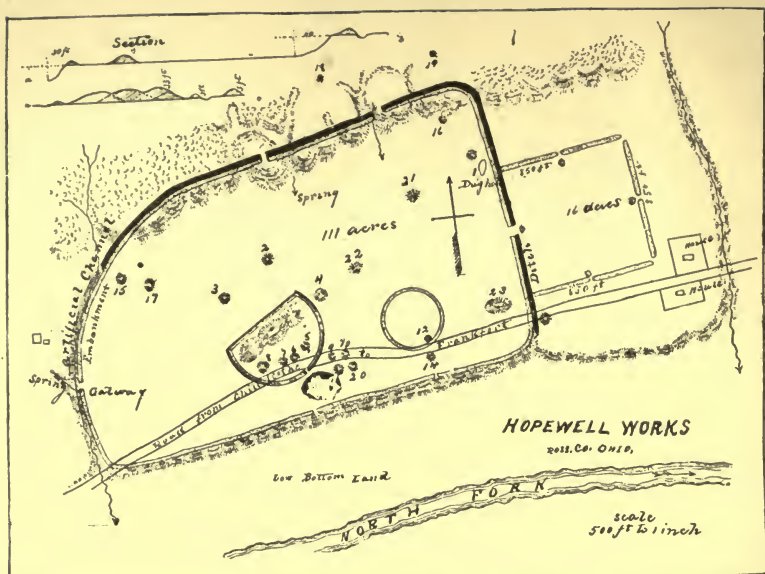






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No. I.

HISTORY AND ARCHITECTURE OF THE TUSAYANS.

BY STEPHEN D. PEET, PH. D.

In giving the traditionary history of the pueblos we shall include only those tribes which had their seats on the Great Plateau, and who still occupy those peculiar habitations to which the expressive name of "Pueblo" has been given, but must exclude those tribes who formerly had their homes among the cliffs, or the Cliff-dwellers, so-called. These are supposed to have belonged to the same stock as the Pueblos, and to have followed the same mode of life; but they were driven from their homes so long ago that they can not be identified, and no record of their past can be secured. It is strange that with so many monuments scattered over the Great Plateau of the interior that the materials for history should be so meagre; but this is in accord with the condition of society. The people may have reached a high degree of art and architecture, and left structures behind them which are very suggestive, but having had no letters or fixed method of making a record of events, their history has perished. It is only among the few survivors that we can look for those traditions which will explain the structures or furnish a clew to the customs of the past. The traditions which we shall consider will be those which have been preserved among the Tusayans. These are important, for they not only cover the history of this people, but they suggest many things in reference to the tribes which formerly adjoined them. There is a great similarity between their traditions. They embrace about the same events. They all begin with the Story of Creation, and describe the various migrations, and speak of the changes which occurred and the reason for the changes. They contain allusions to the attacks of wild tribes and the conflicts which occurred among their own tribes. They generally end with the final

settlement in some chosen locality, and in the combination of the different tribes in making villages or groups of villages.

The wanderings of the Tusayans and Zuñis were, to be sure, confined to the limited territory of Colorado, Arizona, New Mexico and the north of Mexico, and the starting point can not be discovered as occurring in any other region. In this respect they differ from all other aboriginal tribes of America and especially from the so-called civilized people—the Aztecs and Toltecs.

The Aztecs speak of having departed from the "seven caves," and of spending many years in their long migrations. Caves are mentioned as the starting place or station in the migration of the Chichimecs and the Toltecs.* Some have thought that this proves that the Aztecs and the Toltecs were the same people who formerly occupied the pueblos; but the point has not yet been confirmed, either by the evidence of architecture or even by tradition. This, however, can be said, that the Tusayans were a very ancient people on the Great Plateau and they were more nearly allied to the Aztecs than they were to any of the wild tribes, such as the Navajos and Apaches, who occupied the same territory at the beginning of history.

When they were invaded by the Navajos† these ancient people left their homes in the valleys and constructed temporary homes in the cañon walls, as cliff ruins are abundant throughout the region.

Ultimately the ancient Cliff-dwellers succumbed to the Navajos and were driven out. A part joined the tribes in the valley of the Rio Grande, others joined the Zuñi and the people of Tusayan. Still others pushed on to the valley of the Gila.‡ As to the relative age of the tribes very little can be said. The traditionary history of the Navajos,§ including their mythology, covers a period of from five hundred to seven hundred years. The same period might be ascribed to the Cliff-dwellers, but strange to say the history of the Tusayans can not be carried back much farther than this.

Toltec records reach back to an earlier period. They contain the Nahua annals from the time of the deluge, or even from the

*The Choctaws, or Muscogeas, according to their traditions, migrated from the Mountain of Fire, which was situated to the far west. They were led by the leaning pole for many months and years, and finally crossed the "great river" and settled in the Gulf states, where they began to build mounds.

†The Navajos belong to the Athapaskan stock of British America and are allied to the Apaches. Their migrations began in the far north and brought them to the mountain region, which is situated on the San Juan. The most interesting ruins of America are found in this region, and the ancient pueblos here are of superior structure. They were all built by people whom the Navajos displaced when they migrated from the far north.

‡See Canyons of the Colorado, by Major J. W. Powell, p. 53.

§The Navajo mythology begins with the creation and the wanderings of the Navajo war gods. The divine brothers went to the San Juan Valley to dwell. They brought from the houses in the cliffs the ears of corn from which the first pair were made. Their home was in the house of the dark cliffs. Since this pair was created seven times old age was killed. The age of an old man was a definite cycle of one hundred and two years. This would give a period of from five hundred to seven hundred years since the first gentes of the dark cliff houses were created. See Journal of American Folk-Lore—"A Gentle System of the Navajo Indians," by Dr. Washington Matthews, Vol. III., No. 9, p. 89.

creation; but their wanderings terminated in the building of the city and pyramid of Cholula. The Aztec records are contained in charts or picture records. Their wanderings culminated in the building of the great city of Mexico.*

As to the early condition of these pueblo tribes very little is known, and yet so far as it is known, it contrasts strongly both with that of the Aztecs and Toltecs of the south and that of the wild tribes, such as the Apaches and Navajos, to the north.

According to tradition, the Aztecs were, at a very early date, somewhat advanced in civilization, or if not this, they very rapidly acquired the arts of civilization from their neighbors, the Toltecs. The Navajos, on the other hand, according to their own traditions and myths, were, at the outset, and continued to be, wild hunters and mountaineers, and never settled down to permanent seats or to an agricultural life. The earliest condition of the Pueblos was that of an agricultural people, who dwelt in houses and depended upon irrigation for subsistence. Their migrations from one place to another were caused by a lack of rain and the attack of enemies. There is another difference also between the Pueblos and all other tribes and nations. They speak of having dwelt in houses, the ruins of which mark their various stopping places. So their migration routes are much more likely to be identified than either the Aztecs, who speak of caves, or of the wild tribes who speak of the mountains as their former dwelling place.

With this introduction let us turn to the history of the Tusayans. This is contained in their traditions and their architecture.

I. We begin with their tribal traditions and their migration myths. We are indebted to several gentlemen, who have made their homes among the Tusayans, for securing the creation myths, and properly interpreting them.† Among these gentlemen we would place Mr. A. M. Stephen as first; but along with him we would mention Dr. Washington Matthews, Mr. Frank H. Cushing, and Dr. J. Walter Fewkes. Mr. Stephen says the creation myths of the Tusayans differ widely, but none of them designate the region now occupied as the place of their creation, or genesis. They are socially divided into totemic groups, each one of which preserves a creation myth. All of them claim a common origin in the interior of the earth; but the place of emergence is in widely separated localities. The following is the story: In the beginning all men lived together in the lowest depths in a region of darkness and moisture. They suffered great misery, but through the intervention of the great divinity *Myungwa*,

*The Toltec migration is placed by most authorities between the sixth and seventh centuries, Aztec migration, about the fourteenth century.

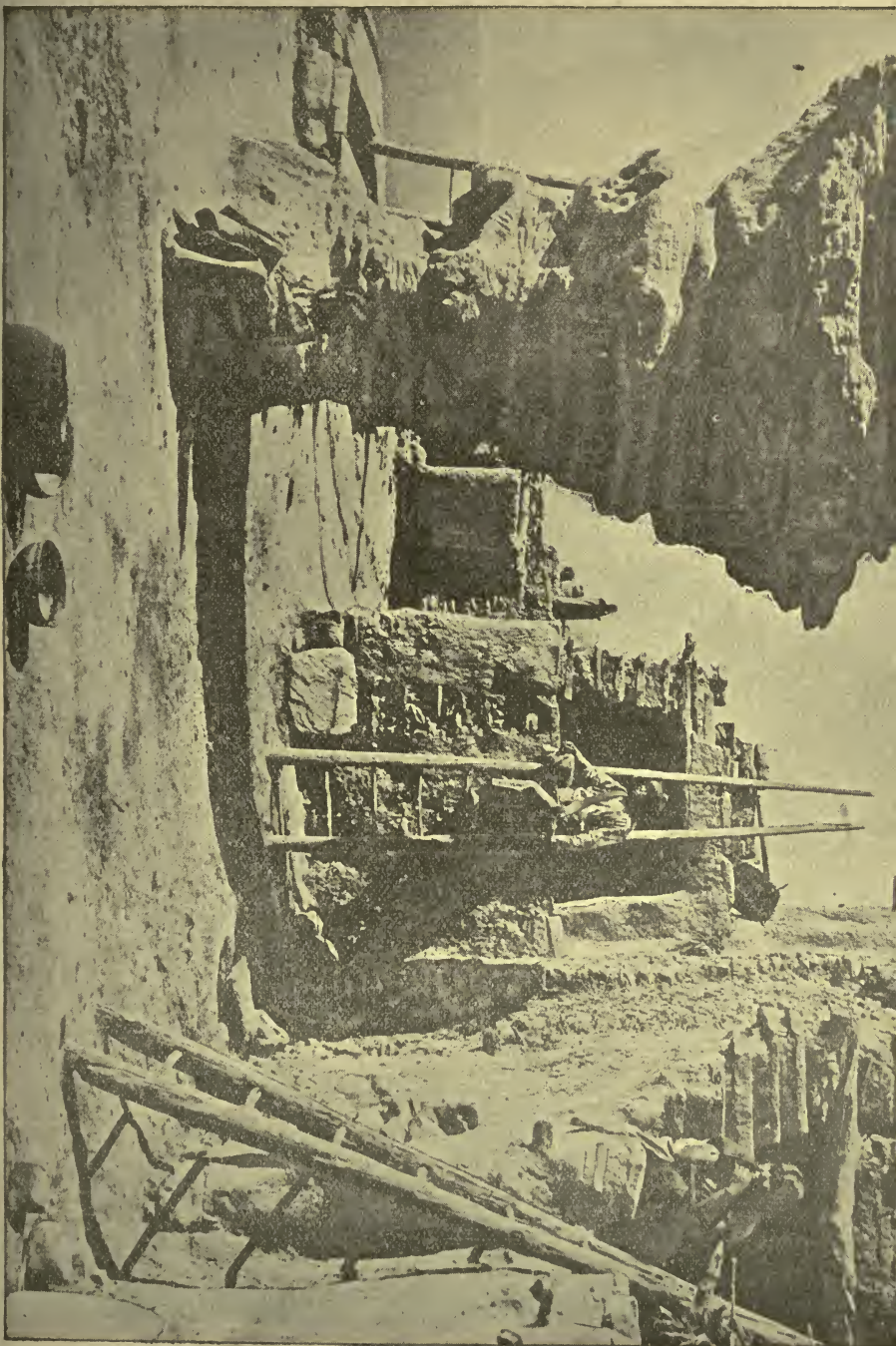
The names applied to the ancient Nahua dwelling places are Aztlan, Culhuacan, (Culiacan?), and Azuilasco.

†Quoted by Mr. Cosmos Mindeleff in the Fifteenth Annual Report of the Bureau of Ethnology.

the god of the interior and of Baholikonga, a crested serpent, the genius of water, the ancient men were led up through four different houses or caves. The means by which they came up was the magic cane, the seed of which the "old men" had received from the divinity. It penetrated through a crevice in the roof over-head and mankind climbed to a higher plain. A dim light appeared in this stage and vegetation was produced. Another magic growth of cane afforded the means of rising to a still higher story or plain, on which the light was brighter, vegetation was reproduced, and animals were created. The final ascent to the surface, which was the fourth plain, was affected by a similar magic growth and was led by mythic twins. According to some of the myths it was accomplished by climbing a tall pine tree; according to others, by climbing a cane, the alternate leaves of which afforded steps as of a ladder.* A similar myth prevails among the Navajos; but the place of emergence was located by them in the Navajo country. There was one mountain on the east like San Mateo; one on the west like San Francisco; one on the north like San Juan; one on the south like the heights beyond Salt Lake. When they came the land was not empty, but another race of people dwelt in the mountains. The seed grew every night, but did not grow in the day-time. This accounted for the solid nodes in the reed or cane. The Navajos have also a tradition of the flood—that the water east, south, west, and north flowed over the land, and the people fled to the mountains of the north.† The Tusayans maintain that the outlet through which mankind came has never been closed, and through it the great divinity sends the germs of all living things. It is still symbolized by the hatchways of the kivas, by the designs on the sand altars, by the unconnected circle painted on pottery, and by devices on basketry. When the people came to the surface they were collected into different families, or tribes, and placed under the direction of twins (Pekonghoya and Balingahoya), the echo, assisted by their grandmother, the spider woman. They distributed gifts among the people and assigned each family a pathway, and so the various families were dispersed. The legends indicated a long period of migrations in separate communities. One community, the Hopituh, after being taught to build stone houses, was also divided and took separate paths. The groups came to Tusayan at different times and from different directions. The legend goes on to state that the people lived in snake skins, which hung on the end of a rainbow. A brilliant star rose in the southeast. The people cut a staff and set it in the ground, waiting until the star came to the top of the staff. They started and traveled as long as the star shone above the staff. When it disappeared

*Annual report of Bureau of Ethnology for 1886 and '87. P. 17.

†See American Antiquarian, Vol. V. No. 3. p. 298.





From "Canyons of the Colorado"

TRAIL UP THE MESA AT WALPI.

By Flood & Vir

they halted, and built houses during their halt. They built both round and square houses. All the ruins between here and Navajo Mountain mark the places." This is the story of the Snake people.

Another story is told by the Horn people. They came from a mountain region in the east, over which roamed the deer, antelope, and the bison. They tell of protracted migration and of halting places. One of these halting places was a cañon with high, steep walls, in which was a flowing stream. This was the Tsegi, the Cañon de Chelly. At first many of the Horns were dissatisfied with their cavern homes, and so they left the cañon and finally reached Tusayan.

The Bears also lived among the mountains of the east. They, too, came to the Tsegi, Cañon de Chelly, where they found houses, but no people. They did not remain there long, but moved farther west, to the place occupied by the Fire People, who lived in a large house. The ruin of this house still stands and is called the fire house.

It is admitted that the Snake people were the first occupants of the region, but not long after the arrival of the Horn people the Squash people came. They say that they came from Palatkawbi, the "red land," in the far south, and for a long time they lived in the valley of the Colorado Chiquito.* They still distinguish the ruin of their early village there, which was built as usual on the brink of a cañon. They built no permanent houses until they reached the middle mesa in the vicinity of Chukubi, near which are ruins which they claim to have been theirs. The sites of the ancient Squash villages are marked by high columns of sandstone called guardians, very much as the site of the Walpi village is marked. The Squash village on the south end of the mesa was attacked by a fierce band of Apaches, who completely overpowered them. The village was then evacuated and the material removed to a high summit, where they reconstructed their dwellings around the village Mashongnavi. This tradition is important, for it shows that the villages were first located in the valleys or on the first mesa, but were afterward built on the high summits for the sake of protection.

The next to follow them were the Bear, Bear-skin Rope, and the Blue-jay. They came from the vicinity of San Francisco Mountain. They built a village on the south end of the mesa close to the site of the present Mashongnavi. Soon afterward came the Burrowing Owl and the Coyote from the vicinity of Navajo Mountain in the north. They also built upon the Mashongnavi summit. Straggling bands of various other groups are mentioned as coming from other directions. The old traditionists at Shumopavi hold that the first to come there were the

*The ruins of this village cover an area of 800 by 250 feet. There is a spring near by in a tall red grass, which grew abundantly there.

Paroquet, the Bear and the Blue-jay. The ruins on a mesa about ten miles south are the remains of a village built by them before they reached Shumopavi. Other groups followed—the Mole, the Spider and the Wiksrún.*

Shumopavi received no further accession of population. No important event seemed to have occurred there for a long period, though mention is made of the ingress of "enemies from the north." The Oraibi traditions tend to confirm those of Shumopavi. This story is that the first houses were built by Bears who came from the latter place; but their houses were afterward destroyed by the "enemies from the north." There was a contention between the people and two villages were built, and half way between the two a stone monument was placed to mark the boundary of the land. This monument still stands. On the end is carved a huge semblance of a head or mask, the eyes and mouth being round, shallow holes with a black line painted around them.†

The legend of the Eagle people introduces them from the west, coming in by the way of the Moenkopi water course. They found many people living in Tusayan—at Oraibi, near the middle mesa, and near the east mesa. They moved to a large mound just east of Mashongnavi, on the summit of which they built a village. Numerous traces of small-roomed houses can still be seen on this mound. They afterward quarreled with this people and moved to the Snake village, where they built their houses. The land around the east mesa was then apportioned out to the Snakes, Horns, Bears, and Eagles—each receiving separate lands and these old allotments are still maintained.

The Sun people claimed to have come also from the old land in the south. On their northward migration they came to the valley of the Colorado Chiquito and found the Water people there. They built on the terrace close to the Squash village and spread their dwellings over the summit. Their village takes its name from a rock near by, which is used as a place for the deposit of votive offerings. Incoming people from the east had built the large village of Awatubi upon a steep mesa about nine miles southeast from Walpi. This village is remarkable for the tragic event, which occurred late in history, by which its inhabitants were entirely destroyed.

The next arrival seemed to have been the Asa people, who in early days lived in the region of Chama in New Mexico. They moved westward to Santo Domingo, to Laguna, to Acoma, to

*The Wiksrún took their name from a curious ornament worn by the men. A piece of the leg bone of a bear, made hollow and a stopper fixed in one end, was attached to the fillet binding of the hair and hung down in front of the forehead.

†This monument reminds us of the stones which are found in France with the eyes, mouth and breasts carved upon them to represent the female divinity. They also remind us of the custom which survived in historic times; for the ancient Roman termini were also marked with human faces. See *L'Anthropologie*, Tome V., No. 2, March and April, 1894, p. 156 and 176.

Zuñi, and finally reached Tusayan by way of Awatubi. The Asa people were among the last to arrive. They were not at first permitted to come up to Walpi, but for some valuable services in defeating the raids of the Utes and the Navajos, they were given planting grounds on the mesa summit; but after a succession of dry seasons, which caused a scarcity of food, they moved seventy miles northeast of Walpi to the Cañon de Chelley, where they built houses along the base of the cañon walls, and dwelt there for two or three generations. Here they intermarried with the Navajos, and a clan of the Navajos is still named after them—"the Highhouse people."

The Asa people returned to Walpi and found the houses occupied. They were taken into the village of Walpi, but were given a vacant strip on the east side of the mesa, where the main trail came up to the village. The Ute, Navajo and Apache had frequently gained entrance to the village by this trail, and to guard it the Asa people built a house group along the edge of the cliff at that point, immediately overlooking the trail, where some of the people still live, and the kiva there, now used by the Snake order, belongs to them. (See plate.) There was a crevice in the rock, with a smooth bottom extending to the edge of the cliff and deep enough for a kikoli. A wall was built to close the outer edge, and it was at first intended to build a dwelling-house there, but it was afterward excavated to its present size and made into a kiva.

The last to arrive was the "Water Family." In the story of their wanderings, reference is made to their various villages in the south, and to the rocks where they carved their totems. Their story is as follows:

In the long ago the people lived in the distant south, but were bad. The divinity, Baholikonga, got angry and turned the world upside down and water spouted up through the kivas and through the fire-places in the houses. The earth was rent in great chasms and water covered everything except one narrow ridge of mud, and across this the serpent deity told all the people to travel. As they journeyed across the feet of the bad slipped and they fell into the dark water; but the good, after many days, reached dry land. While the water was rising around the village the old people got on the tops of the houses, for they thought they could not struggle across with the younger people; but Baholikonga clothed them with the skins of turkeys and they spread their wings out and floated in the air just above the surface of the water, and in this way they got across. The turkey tail dragged in the water, hence the white on the turkey tail now. Wearing these turkey skins is the reason why old people have dewlaps under the chin, like a turkey; it is also the reason why old people use turkey feathers at the religious ceremonies.

The Water people formerly lived south of the Apache country, where they built large houses and painted the rain clouds on the rocks. When they traveled north they came to the Little Colorado near the San Francisco Mountains. Here they built houses, made long ditches to carry the water from the river to their gardens. Here they were tormented with sand flies, which forced them to resume their travels. They began a long journey to the summit of the table-land on the north. They camped for rest on one of the terraces where there was no water. Here the women celebrated the

rain feast. They danced for three days and on the fourth day the clouds brought them a heavy rain.

The following is the legend: The Walpi came to visit us and asked us to come to their land and live with them. It was planting time when we arrived. The Walpi celebrated their rain feast, but brought only a mere misty drizzle. Then we celebrated our rain feast and planted. Great rains and thunder and lightning followed, and the first day after planting our corn was half-arm's length in height, the fourth day it was its full height, and in one more it was ripe. When we were going up to the village of Walpi we were met by a Bear-man, who said that our thunder frightened their women and we must not go near. After we got to the village the Walpi women screamed out against us, and so the Walpi turned us away. "Then our people traveled northward until they came to the Tsegi in the Cañon de Chelly, but they came back and built houses and have lived here ever since."

It was during their sojourn in Cañon de Chelly that the terrible destruction of Awatubi occurred. This took place at a time of the feast, when the youths who had been qualified by certain ordeals, were admitted to councils. At these ceremonies every man must be in the kiva to which he belongs, as they last several days, and the concluding night special rites are held. The Walpis on this night crept up the steep trail to the summit and stole around the village to the courts holding the kivas. They snatched up the ladders through the hatchways, which was their only means of exit. They threw bundles of fire into the kivas and piles of fire-wood were thrown upon the blaze until each kiva became a furnace. They cast red pepper upon the fire and stood showering their arrows into the mass of struggling victims. The date of this massacre was 1692.

Such is the traditional history of the Tusayans. Its importance will be seen in the fact that it accounts for the location of many of the pueblos and the ruins which are near them. It also explains many of the customs which still prevail, and throws much light upon the architecture of the region, which is generally correlated to the customs and myths.

II. We shall now proceed to consider the various pueblos, which were built and are still occupied by the Tusayans. Let us take the location of the pueblos. On this we must acknowledge our indebtedness to Mr. Mindeleff, who made a report of a survey of the pueblos to the Ethnological Bureau. He says the plateaux of Tusayan are generally diversified by cañons and buttes, which have remarkable similarity of appearance. The arid character of the district is especially pronounced. The occasional springs are found generally at great distances apart, which occur in obscure nooks, reached by tortuous trails. The series of promontories or mesas are exceptionally rich in these springs. The ruins described comprise but a few of those found in the province. They were surveyed and recorded for the sake of the light that they might throw upon the relation of the modern pueblos to the innumerable stone buildings of unknown date, so widely distributed over the plateau country. In taking up the descriptions which are given by Mr. Mindeleff, we shall

notice: (1.) The location of the pueblos near some spring or water course. (2.) The proximity to peculiar objects in the landscape, such as columns of sandstone, about which traditions and myths were supposed to linger. (3.) The trails which led across the country and connected the villages with one another. (4.) The presence of high, isolated mesas or rocks, which serve for defenses in case of prolonged attack. (5.) The peculiar arrangement of the buildings around an enclosed court. (6.) The presence of the kiva near the court. Mr. Mindeleff takes the villages in their order, but shows that the elements prevail in each.

1. Walpi —Of all the pueblos occupied or in ruins within the provinces of Tusayan or Cibola, Walpi exhibits the widest departure from the typical arrangement. The confused arrangement of the rooms, mainly due to the irregularities of the site, contrasts with the regularity of some of the other villages, and has no comparison with most of the "ancient works." The general plan confirms the traditional accounts of its foundation. According to these its growth was gradual, beginning with a few small clusters, which were added to from time to time, the site having been chosen on account of its favorable position as an outlook over the fields. Yet even here an imperfect example of a typical enclosed court may be found at the point where the principal kiva, or ceremonial chamber of the village, is situated. An unique feature in this kiva is its connection with a second subterranean chamber, which is said to connect with an upper room within the cluster of dwellings. The rocky mesa summit is quite irregular in this vicinity. The kiva is subterranean and was built in an accidental break in a sandstone. On the very margin of this fissure stands a curious isolated rock, which has survived the general erosions of the mesa.* It is near this rock that the celebrated snake dance takes place, although the kiva from which the dancers emerge to perform the open-air ceremony is not adjacent to this monument. A short distance farther toward the north occur a group of three more kivas. These are on the very brink of the mesa and have been built in recesses in the crowning ledge of sandstone of such size that they could conveniently be walled up on the outside, the outer surface of rude walls being continuous with the precipitous rock face of the mesa.

The positions of all these ceremonial chambers seem to correspond with exceptionally rough and broken portions of the mesa top, showing that their location in relation to the dwelling clusters was due largely to accident and does not possess the significance that position does in many ancient pueblos built on

* See Plate. This is the rock which appears so conspicuously in all representations of the snake dance. The kiva may be seen close by and the stairway to the valley in front of it.

level and unincumbered sites, where the adjustment was not controlled by the character of the surface.

The Walpi promontory is so abrupt and difficult of access that there is no trail by which horses can be brought to the village without passing through Hano and Sichumovi, traversing the whole length of the mesa tongue, and crossing a rough break or depression in the mesa summit close to the village. Several foot trails give access to the village, partly over the nearly perpendicular faces of rock. All of these have required to be artificially improved in order to render them practicable. The plate from a photograph illustrates one of these trails, which, a portion of the way, leads up between a huge detached slab of sand-stone and the face of the mesa. It will be seen that the trail at this point consists, to a large extent, of stone steps that have been built in. At the top of the flight of steps, where the trail to the mesa summit turns to the right, the solid sand-stone has been pecked out so as to furnish a series of foot-holes, or steps, with no projection or hold of any kind alongside. There are several trails on the west side of the mesa leading down both from Walpi and Sichumovi to a spring below, which are quite as abrupt as the example illustrated. All the water used in these villages, except such as is caught during showers in the basin-like water pockets of the mesa top, is laboriously brought up these trails in large earthenware canteens slung over the backs of the women.

Supplies of every kind, provisions, harvested crops, fuel, etc., are brought up these steep trails, and often from a distance of several miles, yet these conservative people tenaciously cling to the inconvenient situation selected by their fathers long after the necessity for so doing has passed away.

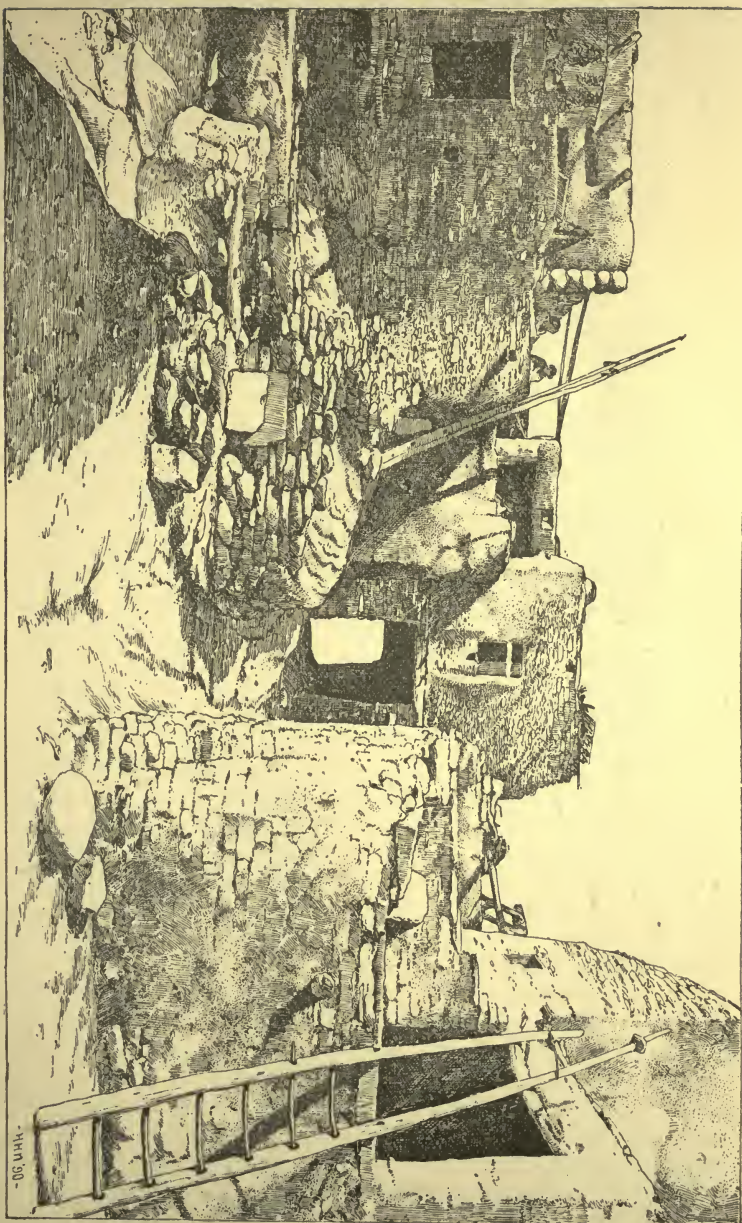
2, Mashongnavi.—This was originally near a large isolated rock known as the "giant's chair;" but the present village was built against a broad massive ledge of sandstone and is conformed to the site as closely as Shupolavi, which is seen in the distance.* It is a compact, but irregular village and conforms to the general outline of the available ground. The eastern portion of the village forms a more decided court than do the other portions. One uniform gray tint, with only slight local variations in character and finish of masonry, imparts a monotonous effect of antiquity to the whole mass of dwellings. By far the largest number of pueblos if occupied for any length of time must have been subject to irregular enlargement. A few ancient examples are so symmetrical in their arrangement that they seem to be the result of a single effort. Another feature that suggests greater antiquity is the names of the occurrence of the kiva here;

*The presence of the sand-stone column is significant, for it would seem as though many of the pueblos were located near such objects conveying the idea that there was a sacredness about them.

From "Canyons of the Colorado"

PASSAGE-WAYS AT WALPI.

By Flood & Vincent.





SCENES IN HANO.

From "Canyons of the Colorado," by Flood & Vincent.

for the builders evidently sought to secure its enclosure within the court, thus conforming to the typical pueblo arrangement. The general view given of Mashongnavi, as well as that of its neighbor, Shupolavi, was not particularly defensible; and this fact secured adherence to the first plan of the pueblo, which was built with the defensive inclosed court containing the ceremonial chamber. The other courts were added as the village grew. Each added row facing toward the back of an older row, producing a series of courts with the terraces on the western sides, carry out a fixed plan. This was the case at the pueblo Bonito on the Chaco, where the even curve of the exterior defensive wall, four stories high, remained unbroken, where the large inclosed court was surrounded by the wings. See plates which illustrate this. In the case of Mashongnavi the enlargement of the pueblo was at various supposed periods; but the original building followed the plan of making the outer walls a defense, while the inner walls were arranged in terraces surrounding an enclosure. Nearly all the dwelling apartments open in wards upon the enclosure.

The arrangement of dwellings about a court characteristic of the ancient pueblos continued. Their clustering seems to have gone on around the center. Although a street or passage-way intervenes, it is covered with two or three terraces, the upper part having an insecure foundation.* The general view of this village strikingly illustrates the blending of the rectangular forms with the angular and sharply defined features of the surrounding rock, and the correspondence is greatly heightened by the similarity in color. Mr. Stephen has called attention to this in the case of Walpi, where the buildings come to the very mesa's edge, and in their vertical lines appear to carry out the effect of the vertical fissures in the upper benches of sandstone. He thought that this indicated a distinct effort at concealment on the part of the builders. Such correspondence with the surroundings forms a striking feature of many primitive types of construction.† This is illustrated in the case of Mashongnavi and Shupolavi, which, when seen at a distance, can hardly be distinguished from the rocks from which they are built.

3. The pueblo of Shupolavi is the smallest of the Tusayan group and illustrates the supposed use and principles of an inclosed court. The plan of this village shows three covered passage-ways similar to those noted in Walpi. "Its presence may be due to a determination to adhere to the plan of a protected court while seeking to secure convenient means of access to the enclosed area." Mr. Mindeleff speaks of the Zuñi pueblo as having a number of these covered passage-ways. He says the highest type of pueblo construction embodied in the large

*See Plate showing passage-way at Walpi.

†See Annual Report of the Bureau of Ethnology, 1886-87, p. 72.

communal houses of the valleys could have developed only as the builders learned to rely for protection upon their architecture, and less upon the sites occupied. The Zuñis seemed to adhere to their valley pueblo through great difficulties.

4. Shumopavi, compared with the other villages, shows less evidence of having been built on the open court idea, as the partial enclosures assume such elongated forms, with straight rows of rooms. An examination shows that the idea was present to a slight extent. At the southeast corner of the pueblo there is a very marked approach to the open court, though the easternmost row has its back to the court. Two covered passages give access to the southeast portion of the court. The kivas are four in number, of which but one is within the village. Three kivas are subterranean, and in order to obtain a suitable site near the mesa's edge, are located at a distance from the village itself. The stonework of the village possesses somewhat a distinct character. The masonry resembles ancient work. Shumopavi is the successor of an older village, the ruins of which still exist.

5. Oraibi is one of the largest modern pueblos and contains nearly half of the population of Tusayan. The general plan shows a large collection of typical Tusayan house, rows which faced eastward. The rarity of covered passage ways in this village is noteworthy and emphasizes the difference between the Tusayan and Zuñi ground plans. The occupation of a defensive site has, in a measure, taken the place of a special defensive arrangement or a close clustering of rooms. Further contrast is afforded by the different manner in which the roof-openings have been employed. In the Zuñi a number of openings were intended for the admission of light, a few only provided with ladders. In Oraibi not more than half were intended for light.

6. Moenkopi. About fifty miles west of Oraibi is a small settlement used by a few families during the farming season. Here a large area of fertile soil can be conveniently irrigated from copious springs in the side of a small branch. The village occupies a knoll at the junction of the branch with the main wash.

This review of the Tusayan villages has its bearing upon the traditionary history of all the pueblos. It shows that there was a uniform style of building; but the departure from this occurred at a modern date. This enables us to decide as to what pueblos are the most ancient. It may be said that if we go away from the sites of Tusayan and Zuñi in a northwest direction we shall find in the Cañon de Chelly that the pueblos were more ancient; although of the same general type. If, on the other hand, we go to the west we shall find that on the Rio Gila the pueblos were not only more ancient, but of a different type. This confirms the traditions which are extant among the Tusayans. We shall need to take a larger scope to understand the entire history.

III. The architecture of the pueblos furnishes us with many hints as to their history, and confirms these traditions.

Let us consider for a moment the peculiarities of this architecture. Several authors have written upon this subject and given their opinions. Among them the first to be mentioned is Mr. L. H. Morgan, now deceased. His theory was that the pueblos were all based upon a defensive principle, but with a peculiar adaptation to communism. He thinks that in the region of the San Juan river, in New Mexico, in Mexico, and in Central America, there was one connected system of house architecture and substantially one mode of life. "The Indians north of New Mexico did not construct their houses more than one story high or of more durable materials than a frame of poles, or of timber covered with matting, bark or earth. A stockade around their houses was their principal protection. In New Mexico going southward are met, for the first time, houses constructed with several stories. In Yucatan and Central America Indians in their architecture were in advance. Next to them were the Aztecs. Holding the third position were the village Indians of New Mexico. All alike depended on horticulture for subsistence—cultivation by irrigation. Their houses represent together an original indigenous architecture which, with its diversities, sprang out of their necessities."

Its fundamental element was the communal type combined with the provisions for defense. The defenses were not so much to protect the village Indians from one another as from the attacks of migrating bands flowing down upon them from the north.

He further says that "the progress of improvement in architecture seems to have been from smaller to larger rooms followed by a reduction of the size of the house in ground dimensions." "An examination of some very old ruins in New Mexico east of the Rio Grande near Santo Domingo reveals the fact that the pueblo was more like a cluster of cells than of rooms, as many of them were but four or five feet square and contrasted strongly with the present inhabited pueblos."

Mr. Morgan thinks an early seat of Indian village life was in the San Juan district, in the valley of the *Chaco* on the *Animas River*, in the Montezuma Valley, on the Hovenweep, on the *Rio Dolores*. And here was the most ancient development of ancient village life in America. Cave-dwellings or cliff-houses are in the San Juan district, the most of them being on the *Mancos River*. He further says it is probable that the original ancestors of the principal tribes of Mexico, Yucatan and Central America once inhabited the San Juan district, and the Mound-builders may have come from the same country, and as proof he refers to the current tradition that these people painted their original home in the manner of a cave and they came out of seven caves to

people the country of Mexico. The evidence of occupation and cultivation through the greater part of this area is sufficient to suggest that the Indian here first attained the middle status of barbarism, and sent forth migrating bands who carried this advanced culture to the Mississippi Valley, Mexico and Central America, and not unlikely to South America. They planted gardens and constructed houses as they advanced from district to district, and moved as circumstances prompted, their migrations continuing through centuries of time.

There is a plausibility to Mr. Morgan's views, especially when we consider that the southern Mound-builders built their houses upon terraced pyramids, which were often arranged around an enclosed court. The Aztecs also built their palaces around an enclosed court, and placed their temples in sacred enclosures, making the terraced pyramid their typical structure. This is regarded by some as an evidence that the tribes of the southwest were all of the Malayan stock, and it is conjectured that possibly the style may have been introduced from the southeast of Asia. We may, at least, say that the style of architecture was entirely different from that which prevailed among the wild tribes of the north, for these never built their houses in terraces and rarely made their villages to enclose a court, the majority of them having rude tents, which were built on the ground and placed in rows, sometimes with a stockade surrounding them.

Still, Mr. Cosmos Mindeleff says the pueblo architecture was intimately connected with and dependent upon the country where its remains are found. The limits of this country are coincident with the boundaries of the plateau region—so much so that a map of the latter would serve to show the former.

Tsegi is almost in the center of this country. The ruins show several periods of occupation, which may be classified as follows: 1. Old villages on open sites. 2. Home villages on bottom lands. 3. Villages located for defense. 4. Cliff outlooks. By the study of the cliff ruins we are led to the conclusion that they are connected with and inhabited at the same time as a number of larger home villages.*

These structures are typical of all the aboriginal houses in New Mexico. They show two principal features—the terraced form of architecture, with the housetops as the social gathering places of the inmates, and a closed ground story for safety. Every house is, therefore, a fortress. Mr. Mindeleff says of the ceremonials connected with the house-building: The material having been accumulated, the builder goes to the village chief, who prepares for him four small eagle feathers. The chief ties a short cotton string to the stem of each, sprinkles them with votive meal, and breathes upon them his prayers for the welfare

* See American Anthropologist, Vol. VIII, No. 2, p 153.

of the proposed house and its occupants. These feathers are called *Nakwakwoci*, a term meaning a breathed prayer, and the prayers are addressed to *Masauwu*, the sun, and to other deities concerned in houselife. These feathers are placed at the four corners of the house and a large stone is laid over each of them. The builder then decides where the door is to be located, and marks the place by setting some food on each side of it; he then passes around the site from right to left, sprinkling *piki* crumbs and other particles of food, mixed with native tobacco, along the lines to be occupied by the walls. As he sprinkles this offering he sings to the sun his *Kitdauwi*, house song: "Si-ai, a-hi, si-ai, a-hai." The meaning of these words the people have now forgotten. The house being completed, the builder prepares four feathers and ties them to a short piece of willow, the end of which is inserted over one of the central roof beams. The feathers are renewed every year at the feast of *Soyalyina*, celebrated in December, when the sun begins to return northward. The builder also makes an offering to the chief divinity, *Masauwu* (called "feeding the house"), by placing fragments of food among the rafters, beseeching him not to hasten the departure of any of the family to the under world. All the natives regard the single-roomed house as being complete in itself, but they also consider it the nucleus of a larger structure. When more space is desired, as when the daughters of the house marry and require room for themselves, another house is built in front of and adjoining the first one, and a second story is often added to the original house.*

The third terrace is the place of general resort and is regarded as a common loitering place—no one claiming distinct ownership. It may be noted that the eldest sister's house is regarded as their home by her younger brothers and her nieces and nephews. This is suggestive of an early communal dwelling. There was at least one fire-place on the inside of the upper stories, but the cooking was done on the terraces, and, usually, at the end of the first terrace, which is walled up and roofed and is called *tupubi*. Aside from this cook-room (*tupubi*) there are numerous small rooms not more than from five to seven feet high, and no larger than seven by ten feet. These are used for baking bread, which is thin, paper-like and is baked on a flat stone, called *tuma*. The only trace of a traditional village is found in a meager mention in some of the traditions that rows of houses were built to enclose the *kiva* and form a place for the public dances and processions. It is probable that court-inclosing houses of a defensive type preceded these houses with the terraces on either side, for they are found on the *Rio Chaco* and elsewhere, deserted, but bearing signs of great antiquity.

*Anawita, the war chief, describes the house in *Walpi* as having had five rooms on the ground floor, and as being four stories high, but it was terraced both in front and rear. The fourth story consisted of a single room and had terraces on opposite sides.

The testimony of Mr. Mindeleff as to the position which the family occupies in the pueblo system seems to be in conflict with that of Mr. Morgan, who makes the gens the unit. He says one family occupies each series of rooms, situated one above the other. The number of lateral rooms communicating with each other was small, and the houses were separated from each other by solid partition walls. No room has more than two windows and very few have more than one; the back rooms usually have one or more round holes, made through the walls, from six to eight inches in diameter. Such rooms are always gloomy as the openings furnish the apartments with a scanty supply of light and air. The ground rooms are usually without doors or windows, the only entrance being through scuttle holes in the roof. They are used for store-rooms. Those in the upper stories are the rooms mostly inhabited. Those located in the front part of the building receive their light through the doors, and resemble in this respect some of the buildings which form the so-called palaces of Central America. Some families have as many as four or five rooms, one of which is set apart for cooking and is furnished with a large fire-place for the purpose.

In the older and more symmetrical examples there were doubtless some effort to distribute the gentes in various quarters of the village. Mr. Stephen has, with great care and patience, ascertained the distribution of the various gentes in the village of the Oraibi.

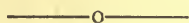
The families which are the most important, such as the Reed, Coyote, Lizard and Badger, are represented in all the larger house clusters.*

This shows the great mixture of the clans which had occurred and the partial breaking up of the clans into families. It is not improbable that the clan system existed in great perfection at an early date, and that the pueblos were then strictly communal; and yet the religious ceremony which has been described as being practiced by the time that the house was erected would show that the family was after all a unit, and that the communal houses were nothing more nor less than a cluster of family abodes, making a sort of joint tenement house, in which the families were all related and were held together by the clan system under a common government.† Mr. Bandelier says that pueblo architecture still bears the type of that honey-combed

*At Oraibi are twenty-five Reed families, seventeen Coyote, fourteen Lizard, thirteen Badger, eleven Rabbit, ten Paroquet, nine Owl, nine Corn, nine Sun, eight Sand, six Eagle, five Bear, four Bow, two Spider, one Snake, one Squash, one Moth and one Katsina.

†The unit of the pueblo architecture is the single cell, and in its development the highest point is the aggregation of a great number of such cells into one or more clusters, either connected with or adjacent to each other. These cells were all the same, or essentially so, for while differentiation in use or function had been or was being developed at the time of the Spanish conquest, differentiation in form had not been reached. The kiva, of circular or rectangular form is a survival and not development. The difference between the largest examples of villages on defensive sites and the smallest appear to be only differences of size. (See American Anthropologist, Vol. VIII., No. 2, p. 157.)

communal conglomeration of many stories with, the stories retreating like the steps of a stair case from the bottom to the top, by which it was characterized in the sixteenth century, and which so many ruins still display. The main features are alike in every New Mexican group, and modifications are noticeable. As a consequence of greater security the houses have more numerous entrances on the ground floor, and the antique ladder has fallen gradually into disuse. The number of the stories is also diminished and consequently the height of the houses. Taos and Zuñi are the only pueblos of four and five story buildings.



PUEBLOS ON THE NORTHWEST COAST.

BY JAMES WICKERSHAM.

A mile west of Neah Bay, on the north shore of the bold headland of Cape Flattery is a small and half sheltered cove. It is well protected from the prevailing southwest winter winds, and is slightly sheltered from the Pacific swells. It is crescent shaped; in front great black rocks thrust themselves above the waters and break the ocean waves rolling landward. On the land side the evergreen bluffs, rock-ribbed and substantial, rise high above the beach, strongly in contrast with the malestrom of shifting tide and waves among the Flattery rocks. In this dangerous bay stands the decaying communal villages of "Kaduckubt," one of the half dozen homes of the "Keve-du-atscha-alch," or Makah Indians. This people speaks the Wakashaw stock of language, which type is spoken from "Hosetlh," their most southern pueblo, twenty-five miles south of Cape Flattery, northward along the wild and inhospitable shores of Vancouver's Island, far up toward southern Alaska. They are strictly an ocean fringe population, boat builders, seamen, fishermen, seal and whale killers.

The pueblo of Kaduckubt was built facing the great ocean, the houses end to end, between the bluff and the beach, on a sand terrace a few feet above the high tide. Formerly buildings covered the terrace its full length along the bay, probably a quarter of a mile, but with the decay of the race they have in some instances fallen and rolled away. They were great one-story wooden communal buildings. The main house posts of fir, two or more feet square, ten feet tall, were carved to represent the thunder bird, the lightning snake, Dokibatl the Changer, or some other mythological character, or some family totem. From post to post across the interior, great beams of fir, hewn to a perfect and proper proportion, forty feet long, eighteen inches in diameter at each end and twenty-

four inches in diameter in the middle, bound the structure together. Plates of square timbers, fifty feet long and eight by ten inches square, were mortised upon the ends of the cross beams lengthwise of the house and fixed the frame-work solidly. One side of the house was higher than the other, so as to give a slight inclination to the roof. Great planks of cedar, some as wide as five feet, and narrower ones as long as fifty feet, hewn to a uniform thickness by stone adzes, were tied to these frame timbers with thongs of cedar roots or pinned with fir pegs, and enclosed the sides. Long boards especially prepared with a groove on either upper edge as a water conduit, placed across the top and weighted with stones formed the roof. When the cracks were stuffed with long dry moss this typical great pueblo became a warm, dry and healthful home for several families or generations of these northern Aztecs.

The distinctive feature of these northwest coast homes is the bed place. Around the side and end walls, except at entrances, is built a platform about four feet wide and about two feet above the ground floor. This bed platform is divided, frequently, by partitions of lumber, or by piles of native boxes filled with the family blankets, clothes, masks and treasures. In front of each bed place is a foot platform probably six inches high and three feet wide, of lumber, and on the earthen floor in front is the family fire. As many fires and family bed places are measured off as is necessary until the great structure is filled. Underneath the bed platform is neatly corded the winter's wood; it may be that one end of the great building is piled high with wood for winter's use, gathered and stored during the summer from the wave-broken drift.

Upon these bed platforms are laid neat and comfortable mat beds. The mats are constructed of round rushes as large as the little finger, without joints or lumps, and are probably twenty or more feet long and four or five feet wide. Several thicknesses of these rush mats are laid on the platform until four inches or more of soft matting is between the body and the boards. Covered by the ancient woolen blanket, into the warp and woof of which long downy duck feathers had been interwoven, this pueblo bed became soft and warm. With stores of fuel, and rafters dripping and groaning with the weight of whale blubber and dried fish, and the pulsing ocean at the front door filled with every variety of marine life, it is no wonder that these people lived a happy life and grew higher in the scale of intellect.

Then, too, the "Kuro-shiwo," or black stream, of Japan, more frequently than we know, threw the flotsam of Asia to their feet. In 1833 a Japanese junk was stranded at "Kaduckubt" and three Japanese sailors were rescued alive and became slaves to "Kaduckubt" lords. The pueblo bed place above described is the typical Mongolian bed. In Northern Asia it is called the "kang" and is made of clay and so arranged that the warm air from the furnace passes underneath it, thus making simply

a warm bed platform. The same principle is applied in Korea, as in the "Kaduckubt" bed, we have the typical Mongolian bed place.

In front of Kaduckubt doors, six feet above the beach, ran a promenade or sidewalk six or seven feet wide, from the first to the last house, a quarter of a mile. It was well built of cedar puncheons, laid on a solid foundation of heavy timbers, while across a dry watercourse a well constructed bridge was thrown. Some of the ancient houses along this promenade have long since rotted away, but the refuse and the ends of decayed and charred posts, yet mark their sites so distinctly that they can be accurately measured.

When the ancestors of Kaduckubt on their migration from the north, had reached the bold promontory of Classet they found marine life so abundant that they erected their wooden pueblos in this sheltered cave and rested in peace and plenty. It was the typical home of a tribe of fishermen. It looked out across the broad Pacific, and from the promenade in front of their pueblo they scanned the horizon with a weather-bureau eye to determine on whaling or sealing voyages a hundred or more miles seaward; or when the men had been at sea for days, as frequently happened, it was from the security of the long walk that their wives anxiously searched for the first sight of returning canoes.

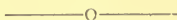
The means of subsistence in this locality was so abundant and life so secure, that the tribes increased and new pueblos were settled. Deeah, Baadah, Waatch, Tsooess (pronounced Suez by Stupid), and Ho-setlh, (Osette) were likewise inhabited by the sons and daughters of the Kwe-dee-ats-cha-alch. At each of these ancient seats of the tribe great timbered, flat roofed communal houses, with carved columns, rounded beams, squared timbers and edged boards were erected. Along the sides of the houses poles were set up and other poles were tied across about five feet above the roof. Reaching the roof from the interior by a ladder the women hung split fish, and great flakes of whale fat to dry in the sun. Berries, nuts, fish and other native foods were placed on these flat roofs to dry, and when a more distant view of the ocean was desired they mounted this higher per h.

The Kwe-dee-a s-cha-alch were carvers and boat-builders; their carvings on masks and mythological pieces are but additional proof of the Japanese blood in their veins. The lines of their great ocean canoes are the envy of all who see them; their whale spears, ropes, buoys and tackle have not been improved upon by contact with the white race. They raised and sheared droves of wooly dogs, and from a spinning-wheel exactly like that used by the Navajo and Zunian, they wove blankets, and looms also like those used by their southern kinsmen.

Their masks and mythology, their civilization and mechanical skill, their mental and moral traits compare with the Pueblo

of the southland. If the Makah people were evicted from their present homes and driven into the region of the Pueblos, and but once, by Aztec or Asiatic, shown the trick of adobe-making, there is no reason to doubt their ability to duplicate anything north of the Mexican line.

I can only add that while they now occupy, and yet erect typical wooden pueblos, that they seem never to have made pottery, and such proofs as we have, show them to have come from the north, and anciently from Asia.



THE SCHUYLKILL GUN AND ITS INDIAN MOTTO.

BY HORATIO HALE.

The earliest inscription in the language of any Indian people north of Mexico is, I believe, that which appears on the remarkable piece of artillery belonging to "the State in Schuylkill." This is the rather peculiar name which has long been familiar to Philadelphians as the usual title of what they believe to be "the oldest social club in the world." That such a club should have its existence in a city dedicated, by its name and its origin, to fraternity, is not surprising. The chartered title of the club is "The Schuylkill Fishing Company of the State in Schuylkill." The history which explains this singular title, and records the still more singular fortunes of the gun connected with it, is told in a large and well printed and illustrated octavo volume, published in 1889. The volume is in part a reissue of an older history of the association, written by William Morris, Jr., and published in 1830. This history was revised, continued, and republished nearly sixty years later by a committee of the club, among whose most efficient members were "ex-Governor William Camac," and the accomplished secretary, "Citizen William Fisher Lewis."

From this authentic source we learn that the company was formed in 1732 by some of the original settlers of Philadelphia, several of whom had accompanied William Penn as emigrants from the old country, and all of whom, it is needless to say, were devoted disciples and followers of "the venerable and good Mr. Isaac Walton," as he is styled in the Introduction. The company was organized under the name of "The Colony in Schuylkill." Its first meetings for sport and social enjoyment were held on the bank of the Schuylkill River, which then flowed through a forest abounding in game. Here the first club building was erected, a wooden edifice of some architectural pretensions, with belfry and steeple, and known at different periods as the Colonial Hall, the Court House, and finally "the Castle." The company survived the troubles of the

colonial period and the vicissitudes of the Revolution. The "Colony" then naturally became a "State;" and under the style of "The State in Schuylkill" the club has continued to flourish to the present day. In its meetings for business, which are held twice a year, in March and October, and its meetings for fishing and fowling, which are held on every alternate Thursday between the first of May and the October gathering for election of officers, constant good-fellowship prevails; and to ensure this desirable result all discussion of politics or religion is forbidden. The list of its active members has comprised some of the most noted names of Philadelphia celebrity, including several mayors of the city; and among its honorary members and guests it is enough to say that Washington and Lafayette were numbered.

Once only, under the influence of a great personal force, which ranks with those two names in world-wide distinction, the club departed suddenly and widely from its rule against politics. The French war, which aroused all the colonies in the middle of the last century, produced a singular turmoil in Philadelphia, with much distraction of opinion and violent political dissension between those who adhered to the Quaker principle which forbade even defensive war, and those who strongly maintained the righteousness of such war. At the head of the latter was Benjamin Franklin, whose vigorous writings and strong personal influence carried the day. A military association for defense was formed, and a fund was raised for procuring cannons from England to form a battery. It was done, and the "Association Battery," numbering finally fifty pieces, was erected. One of the pieces was contributed by the voluntary subscription of the Schuylkill Colony. It was a 32-pounder, for which, as no cannons were cast in the colonies in those days, the order was sent to England. Singularly enough, the records of the company, which are tolerably complete as regards the election of members and officers, give no account of the proceedings relating to this gun. Its purchase may have been considered a somewhat irregular and merely personal proceeding of the members. But of its origin, which is recorded in Franklin's Gazette of the time, there is no question.

As it happened, the Association Battery was not called into service at the time or for many years after. The theatre of the French war was transferred to Canada, and thirteen years later it was closed by the conquest of that colony. Another like period brought about an unexpected change in the destiny of the gun. It is presumed to have been mounted with the other guns of its battery to defend the city from the ships of war sent against it by the mother-country, in which the guns themselves had been cast. When the city was captured the guns, of course, came into British hands, but only to be restored to their former possessors when the independence of the colonies was established. The Schuylkill gun might have been confounded with the others, and thus lost to sight and memory,

but for a rather remarkable precaution taken by its purchasers in placing an indelible mark upon it, in the unusual form of an Indian motto. They had taken care to have the words "KAWANIA CHE KEETERU" cast upon it in conspicuous letters, surmounted by a crown. By this inscription the gun was identified when it was discovered, nearly a century later,—in May, 1880,—by the council of the Pennsylvania Historical Society. They found it lying in the mud of old Fort Mifflin, in a sadly dilapidated state, a mere "useless piece of old iron," "its trunnions broken, its cascabel gone, and upon the swell of the muzzle the dent of a well-directed British shot." Proceedings were at once taken to redeem the unfortunate torso from the forlorn condition so unworthy of its origin and associations. The General Government, being appealed to, promptly restored the gun to the representatives of its first owners; and when, a few years later, the Fishing Company was obliged by the decline of fishing in the Schuylkill to make its mournful hegira from that river to the neighboring bank of the Delaware, taking with it its name, its castle, its "navy" of fishing boats, and its various other belongings, the venerable gun went with the rest to their new home. Here it was "placed in position," in congenial proximity with "the flag of the United States' steamship Powhatan, carried at the battle of Fort Fisher," which was in the same year (1885) presented to the club by Admiral Godon as a memorial of one of the members of the club. Thus, by an odd concatenation of events, it happened that the most peaceful of all associations, dedicated to good fellowship, and bound rigidly to exclude all politics, has for its most highly prized relics two memorials of great wars, waged with the enthusiastic approval of its members, at periods more than a century apart, and each in its day convulsing the politics of two continents.

With the revived interest in the gun a natural desire arose to learn the true meaning and origin of its mysterious motto. Strange to say, the oblivion into which the gun had fallen extended to the very language of its inscription. It was conjectured to be in the language of the Dwaclare Indians, and its meaning was held to be "This is my right; I will maintain it." It appears that an uncertainty as to its source and meaning, and even as to its proper orthography, existed rather less than twenty years after the gun had been cast; for the Pennsylvania Historical Society possesses a curious "pamphlet in verse" on the French war, published in 1755 by an author bearing the rather gruesome name of Nicholas Scull, who had taken for the "second title" of his poem the motto "*Kawanio che keeteru*." Of this he says, "The words I have chosen at the head of my title page, I am told by a gentleman skilled in the Indian languages, is very expressive of a HERO relying on God to bless his endeavors in protecting what He has put under his care." To form some idea of its signification," he added, "you may imagine a man with his wife and children about him, and, with an air of

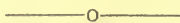
resolution, calling out to his enemy, "All these God has given me, and I will defend them."

This learning, it would seem, passed muster in 1755; but in 1888 the skepticism of science had invaded even the quiet State in Schuylkill. The authority of Mr. Scull's anonymous "gentleman skilled in Indian languages," with the affecting and sublime picture presented by his words, did not satisfy them. They had recourse to an authority about whose skill in Indian lore there could be no question. Dr. Brinton, Professor of American Archaeology and Linguistics in the University of Pennsylvania, on being applied to, at once informed the committee that the inscription was not in the Lenape or Delaware language, and advised that it should be submitted to a student who had facilities for investigating the Iroquois tongue. When, in compliance with this recommendation of my distinguished friend, the inscription was sent to me, it was at once apparent that the sentence was in the Iroquois language and that its meaning had been widely misconceived. Mr. Scull's pious and patriotic hero vanished, and in his place appeared a lordly war-chief. The sentence "*Kawanio che keeteru*," or, as the words would now be more accurately written in the modern missionary orthography, "*Kewennio tsi kiteron*," means simply, "I am master wherever I am." This must be admitted to be a by no means ill-invented Indian motto for a "big gun," however far it might be from representing the sentiments of the worthy contributors for whom the gun was cast.

The reason why the "Colony in Schuylkill" preferred to get the inscription for their gun from their Iroquois visitors and allies, rather than from their nearer Delaware neighbors, may be readily conjectured. At the time when the gun was cast, the Delawares, who had once been noted fighters, and at a later period again became such, had ceased to be a warlike people. Either as a result of defeat in war, or, as they themselves affirmed, by their own voluntary act, they had renounced their independence, and had passed under the protection and control of the powerful Iroquois League. The tribes of this renowned confederacy, then known as the "Six Nations"—the Tuscaroras having been admitted into their league—were at that time in intimate and friendly communication with the government and people of Pennsylvania. In June, 1744, a large delegation of the confederates, headed by the famous chief Canasatego, came to Lancaster to treat with the governor of the colony, in conjunction with commissioners from Maryland and Virginia, on the subject of the French war, which had just commenced. On this occasion the noted Indian agent, Conrad Weiser, of Philadelphia, was interpreter. He must have been well known to the members of the Schuylkill Company; and when they desired to have their war-gift for the public defense signalized by some appropriate motto of unmistakable origin, it was natural that they should seek this inscription in the language of their warlike allies, especially as they had at hand a capable

interpreter, well qualified to furnish it. The spelling shows plainly that it was not written by a missionary, but by a person of some cultivation, accustomed, apparently, to both the English and the German orthography.

In the light of these facts the Schuylkill gun becomes exalted from a mere useless piece of metal to a relic and monument of much historical importance. The confederate tribes, whose friendship and capacity were thus strikingly acknowledged, were then at the height of that reputation for valor and policy which had been growing for more than a century. When we bear in mind that during the entire period from the first settlement of the English colonies to the conquest of Canada they held the balance of power in North America, and by their action mainly decided that the whole continent north of Mexico should be British, Protestant, and free, and not a French Catholic despotism, the debt which the cause of liberty and good government owes to these aboriginal federal republicans will be better appreciated. Viewed in connection with the momentous events which signalized its earlier existence, and of which it was at once a product and a memorial, the Schuylkill gun may be fairly deemed a symbol of free thought. For a symbol representing this all-powerful force its motto would seem to be no idle boast, but to affirm a strictly philosophical truth,—“I am master wherever I am.”



PALÆOLITHIC IMPLEMENTS. IN AFRICA AND BURMAH.

BY HENRY W. HAYNES.

Certain archæologists in this country have questioned the discovery of palæolithic implements in Egypt by myself and others. This has, however, been strikingly confirmed by recent discoveries made there by Professor Flinders-Petrie. The locality is about thirty miles north of Thebes, on the west bank of the Nile, between Ballaseh and Negadeh, on a plateau elevated some fourteen hundred feet above the river valley. In a lecture before the Royal Society, at Edinburg (reported in the *London Times*, April 18, 1895), he describes the objects found by him as “large, massive flints, beautifully worked and perfectly unworn, of exactly the same form as those so well known in the river gravels of France and England.” These have been on exhibition during the past summer, in London, in the library and museum of University College, founded by the late Amelia B. Edwards.

Implements of a similar character, found in the Sahara, can be seen in the museum at St. Germain. They have also been discovered in quarternary gravels and in caverns in Algeria, as

well as in alluvial deposits in Tunis. Long since they were reported as having been found at the Cape of Good Hope, and several years ago in Belgian Congo.

In the *Bulletin of the Anthropological Society of Paris* (October, 1894), an account is given, with accompanying figures, of similar discoveries recently made by M. Paul Regnault in French Congo, in the valley of the Niari, fourteen days' journey into the interior. Thirty-five implements of flint and quartzite were obtained from two different localities. One of these, figured in the article, closely resembles an example published by me in the *Memoirs of the American Academy of Arts and Sciences* (Vol. X, p. 361; Pl. I, Fig. 3), from the "vicinity of the Red Mountain, near Cairo;" this can now be seen at the National Museum in Washington. The objects found were chiefly axes of the Chellean type. In the discussion that followed regarding them, their resemblance to similar objects found in the Delaware Valley, at Trenton, and elsewhere in this country, was commented upon.

In THE AMERICAN ANTIQUARIAN for January, 1895, I gave some account of the finding *in situ* by Dr. Noetling in Burmah of two flint flakes, which to my mind bear unquestionable marks of human origin, in beds claimed to be either Pleiocene, or at least Upper Miocene. In *Natural Science*, September, 1895, Mr. R. D. Oldham questions whether they were actually found *in situ*. He says, "The site is on a spur running out into one of the valleys which have been cut back into the plateau." "No vestige of soil or sand is here, all having been removed by rain and wind, but there is a thin coating of ferrugineous gravel overlaying the solid rock, and it was on this surface, as pointed out to me by Dr. Noetling, that the flakes were found. Ordinarily there would be no hesitation in ascribing anything found in this layer of loose material to the underlying rock; but it is not the same as finding a flake or fossil embedded in a bare vertical exposure below the level to which the rock had been loosened by weathering." "There is a possibility of the flakes" "having been dropped on the spur, or washed down from the plateau above and subsequently become partially embedded in the weathered surface; the possibility being rendered more probable by the fact that the implements are not confined to the outcrop of the fossiliferous, ferrugineous bed, but are scattered over the surface of the plateau above. Under these circumstances it can not be said that the Tertiary age of the flakes has been proved."

Boston, Dec. 5, 1895.

A PREHISTORIC SHELL HEAP ON PRINCE EDWARD ISLAND.

BY J. WALTER FEWKES.

The aboriginal shell heaps or kitchen middens of Prince Edward Island have thus far escaped the attention of archæologists, and nothing of importance, as far as I can discover, has been published about them. It was therefore with real pleasure that my attention was called to extensive deposits of this kind at various points on the island, during a vacation trip in the summer of 1894. One of the most extensive of these shell heaps was found at Robinson's Island, near the French village, Rustico, where I made a few excavations with satisfactory results.

We may justly expect from a study of the shell heaps of Prince Edward Island results bearing on the question of the supposed former southern extension of the Esquimaux. It is likewise of interest to know whether there is any evidence that the gentle people of the interior of New Foundland, called the Beothics or "Red Indians," which Dr. Patterson has lately investigated with important results, ever left traces of residence in Prince Edward Island or the picturesque Cape Breton. A solution of either of these problems would have an importance in the study of the Indians of the Atlantic seaboard, and might lead to important generalizations. While my examination of the shell heap at Robinson's Island would seem to render it probable that Prince Edward Island aborigines were affected by Esquimaux customs, there is no indication that the Beothics had anything to do with the shell heaps of the island.

Prince Edward Island was undoubtedly the home of a considerable aboriginal population in prehistoric times, and was well adapted for the continuous support of savages in both winter and summer. Every stream had a plenteous supply of native oysters, and the game resources were calculated to furnish an abundant food supply. It is strange that the evidences of a considerable aboriginal population has thus far been overlooked,* or that it should have been supposed that the island

* In addition to the articles of Dr. Patterson and Mr. Piers, I have found items of value on Nova Scotian archæology in the following communications published in the Transactions of the Nova Scotian Institute of Natural Science:

1. So the Account of the Petrel—the Sea Serpent—and the Albicore, as Observed at St. Margaret's Bay, together with a few observations on a Beach Mound or Kitchen Midden, near French village By Rev. John Ambrose, M. A., of St. Margaret's Bay. N. S., Vol. I, pt. 2 pp. 34-44 (the part relating to the kitchen midden is on pp. 42-43).

2 On the Occurrence of the Kjoekkenmødding on the shores of Nova Scotia. Initiated W(illiam) G(ossip). Vol. I (erroneous, printed II on the part itself), pp. 94-99. Treats of the investigation by the Institute of shell heaps at St. Margaret's Bay, Cole Harbor and Cranberry Cove.

3 On the Stone Age of Nova Scotia. By J. Bernard Gilpin, A. B., M. D., M. R. C. S. Vol. III, pp. 220-23 (with a rough outline map).

was but a temporary abode of the people who have left such extensive evidences of their former existence.

While little attention has been paid to collecting Indian relics on the island a considerable number of stone implements have been found by local antiquarians. Several stone axes have been reported from the western end by Mr. J. Hunter Duval, and there are stone hatchets, arrow-heads and spear points in the Provincial Museum at Halifax, which are said to have been found near Summerside. Mr. Newson and several residents of Charlottetown have told me of other stone implements, most of which visitors have carried out of the country. These, with many evidences of prehistoric camping-places which I have examined, afford abundant proof that Prince Edward Island was inhabited by a considerable Indian population at the time the French first came to the island. My limited visit did not permit me to examine all places where Indian graves were reported, but a well-authenticated account of the discovery of a skeleton wrapped in bark, and the name Savage Island, led me to visit that place, where I saw evidences of former Indian occupation, and small shell heaps which would repay excavation.

Traces of kitchen middens were detected at several points on the island, but that at Robinson's Island, near Rustico, about twenty miles from Charlottetown, seemed to offer the best opportunity for archæological examination. Evidences are not wanting of other shell heaps in the neighborhood, some of which are very old. A large camping spot of this kind formerly existed near the Rustico end of Oyster Bay bridge, but it has now almost completely disappeared, the contents having been used to ballast a part of the causeway. Evidences of prehistoric occupation are, however, still to be seen near its former site, where layers of shells, indicating former shell heaps,* crop out on the bluffs overlooking the bay. I was informed by an old French resident, Mr. Hubert Gallant, that he was present when the old shell heap at this point was removed, and that a human skull, with large bones, was taken from it.

The Robinson's Island shell heap is a low mound, the surface of which is cultivated, being but a short distance from the only farm house on the island. At the time of my visit it had never been disturbed, save on one side where the tides had worn it away, exposing a section of it forming a low bluff, in which the layers of shells could be traced for over a hundred feet, thus indicating its great size. In my excavations I simply dug into the bluff, following the layer of shells for several feet, at different points along the escarpment. Scattered through this layer of shells were charred fragments of wood, bones of large animals, ashes, and like evidences of fire. The soil below the

*These aboriginal shell heaps must not be confounded with the modern piles of shells which are dredged from the river beds and used for fertilizers.

shelly layer also showed fire action. The accumulation of vegetable mould above the layer of shells was in some places ten inches deep, and the average thickness of the stratum of shells was about six inches, thinning out at each end. All evidences of previous human occupation were dug out of the shell deposit, none from the layers above or below.

The deposit is composed of the shells of the ordinary esculent mollusca, now represented by living species in the waters of the island. Among these may be mentioned the oyster, which makes up the greatest bulk of the deposit, the common clam, *Mya arenaria*, *Natica rerios*, *Venus hercenaria* and *Crepidula fornicata*. I was particularly anxious to find the shell of the English periwinkle, which, in late years, has come to be so abundant on the coast of Nova Scotia and New England, but not a single specimen was found. As far as negative data goes this gives us evidence supporting the theory that this little stranger is an introduced shell, but it may be borne in mind that this mollusc, if it existed in Nova Scotia fauna before the settlement of the country, may not have found the waters of Prince Edward Island congenial. The increase in its numbers in late years on the New England coast has been discovered by other naturalists. We must, in this connection, likewise bear in mind that the molluscan fauna of Prince Edward Island is peculiar, and as shown by others, the survival of the oyster there calls our attention to the extinct beds of the New England, north of Cape Cod, where the shells of this bivalve are common.

The two stone implements which I took from the Rustico shell heap were in no respect different from those found all over New England and Nova Scotia, but the character of the rock was not the same as that which is found *in situ* on the island. Both were diorite, and while they may have been brought there in glacial drift, were certainly not obtained from the rock in place. Similar stone implements are recorded or reported from several localities on the island, and in most, if not all instances, these celts are of the same rock, foreign to the island.

Mr. Newson, of Charlottetown, has given me a drawing of a pipe from Prince Edward Island similar to the curious specimen from Nova Scotia, figured by Mr. Piers, and now in the Provincial Museum at Halifax.

Dr. Patterson's interesting discovery in Nova Scotia of ivory spear points, similar to those used by the Esquimaux, seem to me to narrow the question of how these implements came to Nova Scotia to two alternatives, either this boreal people formerly ranged as far south as Merigonish, which is in a lower latitude than Prince Edward Island, or they impressed their mode of hunting the walrus upon the natives of the island. We know that the walrus frequented the coast of Prince Edward Island up to within historic times. In fact, in early days their capture was a considerable industry, and very good skulls of

this mammal can be seen in the Charlottetown Provincial Building. Localities as Cow Bay took their names from the abundance of this animal. The carved ivory tusk found by Dr. Patterson shows that the animal was hunted by the aborigines of Nova Scotia, and its peculiar form that the Esquimaux method of hunting was in vogue on the coast of this peninsular.

In the Robinson's Island shell heap I found a similar ivory point to that described by Dr. Patterson from Merigonish, which would seem to indicate that the people who frequented the place were also accustomed to hunt the walrus in much the same way as the Esquimaux. The spear point in question had a hole at one end, to which a bladder was attached when used. When it penetrated the walrus the spear point was detached from the shaft. The locality where Dr. Patterson found his ivory spear is just across the strait which separates Prince Edward Island from Nova Scotia.

A solitary fragment of copper was found in the Rustico shell heap, in the form of a bead not unlike those which have been recorded from New Brunswick and Nova Scotia. The nearest locality from which copper implements have been recorded is the Island of Merigonish, from which Dr. Patterson dug up fragments of pottery, bone and stone implements and copper knives. These objects are now in the Museum of Dalhousie College, Halifax, the authorities of which institution kindly allowed me to examine the collection.

Mr. Piers, in his article, mentions eighteen specimens of copper in the Provincial Museum at Halifax, which were collected at Bachmann's Beach, Lunenburg, Nova Scotia. They consist of nuggets of copper, some of which are somewhat hammered, well-made knife blades and pointed implements.* Evidently this copper is the native ore found in Nova

*Aboriginal remains from Nova Scotia, Trans-Nova Scotia Inst. Nat. Science, Vol. VII, 1889. The free native copper from which these were made is of Nova Scotia origin. As no native copper has been reported from Prince Edward Island, this bead must have come from the neighboring peninsulars.

Scotia and fashioned into rude implements by hammering in much the same way as the copper implements of the Ohio mounds. Thus far, however, the graves of the Micmac Indians have not yielded any metallic object which compares with those of the mounds, but it is highly suggestive that the art of working copper was known to the aboriginal people of Nova Scotia, New Brunswick, and that an object of this metal was found in Prince Edward Island.

PALESTINE EXPLORATION FUND.

Responding to several requests, I give a list of all our publications, with prices and all necessary information:

MAPS.

The Contour Map is reproduced by Mr. E. E. Howell, manufacturer of Relief Maps for the U. S. Geological Survey. His map is a precise *fac simile* of the original as to color, names, etc. It is sold for \$55 and is packed for shipment and warranted against breakage. Mr. Howell is under contract with the Fund. He has furnished copies to the Smithsonian, Harvard, Yale, Johns Hopkins, Hartford, Rochester, and other institutions, also to churches and individuals. The map measures eight feet by four, and is on the scale of three-eighths of an inch to the mile. The map was made by Mr. George Armstrong, of the survey party, now assistant secretary of the Fund, who gave years of work to its production. Address, E. E. Howell, 612 Seventeenth street, N. W., Washington. D. C.

The other maps are to be obtained of Messrs. G. W. & C. B. Colton, 312 Broadway, N. Y., who import them in sheets and can furnish them in any style desired, mounted on rollers, backed with linen to fold, or otherwise. These well-known map-makers will send a circular on request, but I may say that they have on hand: (1) The Old and New Testament Map, in twenty sheets; (2) the Modern Map, in twenty sheets; (3) the Old and New Testament Map, in twelve sheets; (4) the Modern Map, in twelve sheets. All these are on the scale of three-eighths of an inch to the mile. The size of the twenty sheets when mounted on roller is eight feet by six, that of the twelve sheet is six and three-quarters feet by four and a half. They have also the (5) Great Map, scale one inch to the mile, which is thirteen feet by seven; (6) the Reduced Map of Water Basins, in six sheets; (7) the Plan of Jerusalem, showing modern discoveries; and (8) the Plan according to Josephus; also (9) the volume on Names and Places. I would refer the purchaser, for further information, to the Messrs. Colton.

All other publications are kept on hand by me at Cambridge. I make a slight increase on the London price to cover charges between London and the purchaser, and send everything post-paid. It may be well to say that the ordinary expenses of my secretaryship are gladly met as a part of my annual subscription.

BOOKS.

1. Fauna and Flora. By Canon Tristram. 1 Vol. 4to. With plates of animals. 450 pages. A fine volume. \$11. This is the only one of the Survey Quartos which is supplied to me. For the others, now rare, information will be given from the London office upon application directly, or through me.

2. The Recovery of Jerusalem. By Sir Charles Wilson and others. Fully illustrated. Demy 8vo. 550 pages. This book describes the previous excavations very thoroughly. \$4.50.
4. Tent Work in Palestine. By Major C. R. Conder. Fully illustrated. Sixth edition. 400 pages. A graphic account of the author's experience as surveyor, full of information of every kind given by a competent student. \$1.30.
5. Heth and Moab. By Major Conder. A companion to Tent Work, covering the writer's observations east of the Jordan. Third edition. \$1.30.
6. Across the Jordan. By G. Schumacher, C. E. Illustrated. Relating especially to the Hauran. \$1.30.
7. Survey of the Jaulan. By the same. Illustrated. A part of the survey of Eastern Palestine. \$1.30.
9. Mount Seir. By Prof. E. Hull. An illustrated account of Geological study of the Arabah, Sinai, etc. \$1.30.
10. Syrian Stone Lore. By Major Conder. This work illustrates the Bible from the monuments. A study of Inscriptions. \$1.30.
11. Thirty Years' Work. By Walter Besant. Fully illustrated. Telling in a summary way all that has been done by the Fund. 75 cents.
13. Geology of Palestine. By Professor Hull. Colored maps, etc. 4to. \$3.50.
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23. The City and the Land. A course of lectures given in 1892 by Messrs. Wilson, Conder, Tristram, Petrie, and others, treating of Ancient Jerusalem, Work of the Fund, Natural History of Palestine, its Future, the Hittites, Lachish, etc. Second edition. 80 cents.
24. The Tell-Amarna Tablets, including that of Lachish.

By Major Conder. 176 letters written about 1480 B. C. An invaluable book. \$1.

26. Mound of Many Cities. By Dr. F. J. Bliss. His fully illustrated account of work at Tell-el-Hesi (Lachish). 200 pages. \$1.10.

27. Judas Maccabaeus. By Major Conder. History of the Jews from the fall of the Kingdom of Judah to the end of the War of Independence, bridging over the period between the Old and New Testaments. This book fills an important place. 90 cents.

28. Index to Quarterly Statements, 1869-92. In paper. 40 cts.

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CASTS.

Lachish Tablet, showing one side, 35 cents; showing both sides, clay, 75 cents.

Seal of "Haggai, son of Shebaniah," metal, 55 cents.

Inscribed Hebrew weight from Samaria, metal, 70 cents.

Inscribed Bead or Weight, clay, 30 cents.

PHOTOGRAPHS, ETC.

Inscription from Herold's Temple, mounted, with translation, 15 cents.

Moabite Stone, mounted, with translation, 15 cents.

Jar found eighty feet below the ground at southeast corner of Jerusalem, mounted, 15 cents.

Siloam Inscription, with translation, time of Hezekiah, *fac simile* on card, 15 cents.

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Photograph of Contour Map, unmounted, 8x4 inches, 25 cents.

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Collotypes of the Raised Map. Superior to Photographs. All the names shown. 24x12 inches, with margin of three inches. A new and very satisfactory publication, 70 cents.

One copy of 12-sheet Map, modern names only, in case, \$5.

The above prices include postage. A few are slightly reduced in consequence of what occurred to the last box at the Custom House. I have numbered the books as on the London circular. I have given only subscriber's prices because almost every one desires the Quarterly Statements. I can supply some of the back numbers of Quarterly Statements. It must have been noticed that with the engagement of Mr. Dickie at Jerusalem, the Quarterly Statement is more fully and perfectly illustrated than ever before.

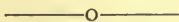
The improved health and continued work of Dr. Bliss along the old wall of Jerusalem is gratefully reported. It is a grand period in our work, the best that has been seen. But we need subscriptions very much. For \$5 I send at once "Thirty Years'

Work" and the current Quarterly Statement; for \$2.50 the Quarterly Statement.

It may now be said without fear of contradiction that the three periods shown in the portions of wall, and especially of the gates, which have been uncovered, are those of Hezekiah, Herod and Eudocia. It remains to separate the work of Solomon from that of Hezekiah, and this may shortly be done on the hill Ophel.

42 Quincy St., Cambridge, Mass.

THEODORE F. WRIGHT,
U. S. Secretary.



NOTES ON GENERAL ARCHÆOLOGY.

BY DR. D. G. BRINTON, M. D.

THE LATEST EXCAVATIONS AT TROY.—It is well known that the late Dr. Schliemann had, at the time of his lamented death, by no means concluded his researches on the site of ancient Troy. After his demise they were resumed partly by means of funds furnished by German patrons, partly by the substantial aid of Mrs. Schliemann. They were suspended at the close of 1894 largely on account of the disturbed state of the country.

The results up to that time have been made known to the public by occasional letters in German periodicals, but their full description is yet to appear. They have been distinctly subversive of some of Dr. Schliemann's pet conclusions. The second city from the bottom, which he pronounced to be the Troy of Homer, has been shown to be a prehistoric site of the neolithic age, while the sixth city from the top, that which he called the Lydian, now appears to be the true Troy of the Homeric legends. It was much larger than the former, had solid Cyclopean walls, three gates surmounted by three strong towers, and its streets were comparatively wide.

What is most interesting about it is that its art, such as pottery, decorative designs, etc., is distinctly that of Mycene and Tiryns, proving that the same culture extended across the Egean into Asia Minor. This was to some extent recognized by Schliemann, but, as is now proved, inadequately.

LAKE AND PILE DWELLINGS.—That early man, to defend himself from his enemies, should erect his dwellings on artificial supports in the midst of marshes, bogs or shallow ponds, or on the shelving bottoms of lake shores, is so natural that it is useless to take such a habit as a sign of ethnic relationship or homogeneity of culture.

Examples are common in all parts of the world. Pile dwellings were observed by the early voyagers on the shores of Lake Maracaybo, and their remains have lately been discovered on the Florida coast. An interesting survey of them as they occur in Europe has just appeared in the Proceedings of the Royal Society of Edinburgh from the pen of Dr. Robert

Munro. He entitles it, "A Sketch of Lake-dwelling Research," and in the compass of twenty-eight pages presents the results of investigation into the Scotch and Irish "crannogs," the Swiss "palefittes," and the Lacustrine "oppida" of the early iron age. He shows that throughout Southern and Central Europe the habit of constructing lake-dwellings was prevalent in former times. An analysis of the art-remains and the processes of architecture indicates that the Lake-dwellers were not a homogeneous people except perhaps in the early neolithic period. It appears that beginning at that remote epoch the same peoples continued through the bronze age, but were subjugated or destroyed by another people introducing weapons of iron. These are the builders of the "oppida" and have left abundant remains of their art, which is known to English antiquaries as "late Celtic." There is much to be done yet, however, before we can positively identify the ethnic relationship of these primitive tribes.

THE SACRED NUMBER FOUR.—In the Journal of the Anthropological Institute of Great Britain, November, 1895, there is a paper by A. W. Buckland on *four* as a sacred number. The aim of the author seems to be to show that because the number four is found in remarkably frequent association with myths, beliefs, superstitions and customs, both among American tribes and many nations of Asia and Africa, therefore we should infer a common origin, "if not of race at least of myths and superstitions, etc."

It can not be too strongly urged that such an inference is not justified by the principles of modern ethnology. Such identities are the natural outcome of the relation of man to his surroundings. These relations are largely the same everywhere, and his perceptions of them are the same, because everywhere the human mind is the same. He embodies these perceptions in analogous expressions, whether of art or of language, in myth or in rite. The sacredness of numbers over the world depends upon these fixed relations of man and the universal laws of his mind. Where we do not find them the same we must regard it as an anomaly, and not the reverse, as this author and so many others have done. (See an article on "The Origin of Sacred Numbers," in the *American Anthropologist* for April, 1894.)

THE AGE OF THE GATHAS OF THE AVESTA.—It is well known to scholars that the late Professor Darmestetter assigned a very late date—about the beginning of the Christian era—for the origin of those ancient songs in the Avesta known as the *Gathas*. His wide erudition imposed this opinion on many students, but it is safe to say that it is now losing ground. The language of the gathas is earlier than the inscriptions of Darius and so close to the Sanscrit that it could probably have been understood at the time by the Indian sages. This alone seems sufficient to disprove Darmestetter's theory and to restore the badge of antiquity to these venerable fragments.

THE WHIP-POOR-WILL AS NAMED IN AMERICAN LANGUAGES.

BY ALBERT S. GATSCHET, WASHINGTON, D. C.

The quaint and unobtrusive note of the little whip-poor-will bird has attracted the people's attention more than the voice of most other birds. It is heard mainly in the evening, after sunset, when all animate nature is going to rest for the night; but also at daybreak and during the early hours of the day, before the darting rays of the sun have gained their full power.* The bird is confined to the two American continents, but the genus of the goat-suckers or Caprimulgidæ, to which it belongs, is common to other parts of the world as well. There are different species of the whip-poor-will, which were discussed at length in a scientific and interesting article by Dr. R. W. Shufeldt, entitled, "Night-hawks and Whip-poor-wills," in *Popular Science Monthly* of New York, January, 1894, pp. 308-313. Some of his statements were made use of by the present writer. Another comprehensive article on the subject will be found in the "Century Dictionary of the English Language."

The two best-known species of the whip-poor-will are *Antrostomus carolinensis* and *Antrostomus vociferus*, which is smaller by one third than the *A. carolinensis*. Some of the Indian languages accurately distinguish between the two; the Creek or Maskoki of the Gulf States, *e. g.*, call the former tchukpilápila and the latter wakúla. The Caprimulgidæ or Aigotheres genus, in English goat-suckers, is improperly called so after the absurd popular story that goat-suckers are sucking the teats of goats and other pasturing animals, and thus rob them of their milk.

Naturalists differ in the naming of the various kinds of whip-poor-wills, and so does the popular mind of this and other countries. The note of the bird is queer enough to inspire various suggestive names, and *all of these* are *onomatopoetic*, as are also the names coming from illiterate nations. The voice of the bird is also alluded to by poets, and a collector of all the verses and poems addressed to it in the languages of civilized nations could soon fill a large album with extracts from books and cuttings from newspapers.

An' cattle bells is ringin',
An' whip-poor-wills is singin',
An' golden apples swingin',
An' lots of them to spare!

—From a poem on "Fall Time."

An orchid growing in Southern New Jersey, *Cypripedium*

* They are usually heard early in the morning and from 4 to 9 P. M.

acaule, or lady's slipper, is called by the Jersey farmers, *whip-poor-will shoe*.

The time of the year when the whip-poor-will is heard has prompted farmers to formulate certain rules for the field operations they have to perform at that period. Thus we find that: "The Delaware Indians observe when the white oak puts forth leaves in spring, which are of mouse-ear size, it is time to plant corn." Then the whip-poor-will has arrived and is continually hovering over them, calling out his Indian name *wekolis*, in order to remind them of the planting time, as if he said to them "hackiheck!" go to planting corn! (Heckewelder, Indian Nations, p. 307.) The Miami Indians will say, *ziwashiko'ko*! "Sow your seed!" In the same manner the cry of the cuckoo, first heard in May, has suggested many agricultural rules in proverb form to the European farmer.

The names given to the whip-poor-will by white people always convey some animistic idea, which makes them popular, jocular and easy to remember. Thus, the English language calls them whip-poor-will, in which the "poor William," or even the "whipping of the poor Will," is intended for a malignant slur; also "chuck-Will's-widow" of the Southern States, though here we do not know who is going to chuck (choke) her. In the North he is sometimes called: "Breath stinks awful," "No more snow," "No buckskin horses," and German-Americans will say, "Hans, hack Holz." So the Brazilians call it in Portuguese João [cor-ta páo, "John chops wood," or *manha eu vou*, "to-morrow I am going."*

Spanish-Americans call the goat-sucker *chotacabra*, and the smaller species of the whip-poor-will "chotacabra chillona;" they modify the English term into *juipoil*, *juipuruil*. *Madrugador*, or "early riser," is another Spanish term used in Mexico, and an ancient Mexican town mentioned in the Codex of Mendoza is Zacuan-tepec, from *zacuan*, the Nahuatl name for the bird, which means "rising early." The pictorial way to express the idea is the picturing of two feathers fastened in front and two above the usual sign for "on a hill," *tepec*, because the wind blowing through these feathers produces the same sound as the *madrugador* in his early chant. (A. Peñafiel, *nombres Mexicanos*, p. 254.)

Follows an enumeration of the whip-poor-will's names in various languages of America, which is not as full as could be desired. The majority of collectors of vocabularies do not think to inquire after terms so special as this, and much less do they try to establish distinctions between the different species of a genus of natural history and to inquire for the names of both.

The languages of the *Algonkin* family, spoken in southeastern

* Karl v. d. Steinen, *Naturvölker Brasiliens*, 1894, p. 83.

Canada and in the northern and northeastern parts of the United States, have yielded the following appellations:

| In the Micmac dialect—wikwelitch.

In Menomonee—waipona.

¶ In Shawano—kokolathí.

¶ In Arápahu—bixananêhi; in the plural, bixanenâhíha.

In Peoria and Miami—ókuya or úkuya, wi'kuwé; is also the name for April or May, when the whip-poor-will is first heard.

In Ojibwe—gwengwawia and wahúnase.

In Long Island and Delaware—whakóris or wekólis.

The *Iroquois* languages of the State of New York differ but little in their terms. To pronounce words of this family correctly is not an easy matter, and hence I add the following directions: the sign ' or apostrophe denotes an explosive noise; the underlined r, r, is a trilled sound; the other r is the common English r. The ⁿ superior indicates nasalizing. X is the *ch* of Greek. My information was derived from a native of the Tuscarora tribe, J. N. B. Hewitt, of the Bureau of American Ethnology.

In the Tuskarora dialect—kwä'kúryeⁿ.

In Seneca—kwä'ngónyeⁿ.

In Cayuga—kwa'koryeⁿ.

In Mohawk—kwa'koryeⁿ.

In Onondaga—kweⁿkó'hyeⁿ.

In Oneida—kwä'kolyeⁿ.

In the cognate Cherokee language we have wágulí, perhaps borrowed from the Algonkin term.

Of the *Maskoki* dialects, once spoken throughout the Gulf States, and even now heard in some remote counties there, I have obtained only the following onomatopoeias:

Dialect of Creek or Maskoki proper—tchukpilápila, or tsukbélábēla; the smaller species waxkúla, from which is named Wakulla, a locality in northern Florida.

Dialect of Seminoles—sukbalámbala.

Dialects of Hitchiti and Koassáti—tchokbilábili.

Dialect of Alibamu—tchukanábila.

The *Yuchi* Indians, who speak an entirely different tongue, call the bird tchuspalakwáni, and the *Natches*, also allophylic, name it tukpupúhu.

The *Dakota* languages, as far as I could learn from the specialist, Rev. J. O. Dorsey, all use the same term, hakugdhi, except the Sioux or Dakota proper, where pakúwishka is in use. The *dh* of this language-family is the *dh* sonant of Anglo-Saxon, the counterpart to the *th* sound of Anglo-Saxon and of modern English.

hákugdhi in the Omaha and Ponka dialects.

hákule in Kansa or Kaw.

hakuñkdhe in Osage.

hékukt^{thi} in Kwapa or Quapaw.

When the Ponka Indians quote the full note of the bird they

use the sentence: "hákugdhi, háhugdhi, adshá!" Accented syllables are here sung rather staccato than crescendo.

In other North American languages I obtained the whip-poor-will's name only for a few; so the *Nez Percés*, or Sahaptins, on Middle Columbia river and in Idaho, call it wauwéyuk, the *Klamaths* of southwestern Oregon kiwash or giwash, with explosive initial sound, while the children's name among the Kayowē is pábi, or "younger brother." The *Zuñi* Indians of New Mexico possess different names for it (F. H. Cushing). One of these is used only in their mythic and legendary stories: kwakwátli nóna, "the one who does or cries the kwakwátli," this being a purely onomatopoeic term. Another is áwatin 'lána, (thlána), to be rendered by "great mouter," "babbler," "blatherskite;" 'lána being *great, much of*, áwati, the abbreviation of awatinnek, *using the mouth*. This bird is frequent in that country and so sacred to these Indians that at night it takes the place of the eagle.

The above is a small specimen only of what Indians can do in onomatopoeia. Their languages are more given to this form of synthesis than those of Europe, and a large number of animal names and sound imitating verbs could be mentioned for comparison. Thus, the wren is called in Omaha, kixëxetcha, "laughing bird"; the prairie-dog, who with his thin, squeaking voice, tells people to come to him, pispiza, "come here," in the Sioux dialect. The katydid is called in the Illinois dialects of Algonkin: kakákia; the mocking bird is called in Wichita, itchirish wákëre (itchirish means *bird*); in Cheyenne, wi-i-i, plural, wi-i-ihu; in Omaha, tadhtaka.

In the *American Anthropologist*, VII, 68-70, 1895, Dr. A. F. Chamberlain has published an instructive list of sound-words obtained from the Kitunaha Indians on the Canadian boundary line: animal calls and cries, human cries and noises, noises in nature, which presents many analogies with the whip-poor-will's names.

EGYPTOLOGICAL NOTES.

BY WILLIAM C. WINSLOW, D. C. L.

THE ARCHÆOLOGICAL REPORT for 1894-5 (published annually by the Egypt Exploration Fund), not to be confounded with the elaborate memoirs, is an absorbingly interesting *brochure*. It is a quarto of 59 pp., with a map of Alexandria, a plan of the temple of Queen Hatasu, a view of that temple, a view of two Coptic mummies, and five maps of Egypt. There are also three minor illustrations. The letter-press includes: I. Egypt Exploration Fund. (1) The Report on Researches in Alexandria. (2) Excavations at Deir-el-Bahari. II. Progress of Egyptology for the year. (1) Hieroglyphic Studies. (2) Græco-Roman Egypt. (3) Coptic Studies. III. Illustrations. This publication is a gift to each subscriber to the Fund, but to others it is sent at the low rate of 90 cents a copy. Dr. Hogarth's description of his thorough work at Alexandria is another link in the chain of the highly scientific investigations conducted by the society. Every reader of this magazine should see it.

PROFESSOR ERMAN, the rising sun in German Egyptology, and therein a true disciple of Ra, has been honored with an election to the Berlin Academy, which makes him one of the "immortals." In aiming to make Egyptology more and more a positive science, linguistically at least, Dr. Erman, in a jocular vein asks, "Where are the good old times when every text could be translated and understood?" and then says that "the number of ascertained words in the vocabulary is continually diminishing, while the host of the unknown increases." To these words of his speech to academy I add this significant sentence: "We have yet to travel for many years on the arduous path of empirical research before we can attain to an adequate dictionary." Prof. J. H. Breasted, Ph. D., who holds the chair of Egyptology in the Chicago University, the author of the learned thesis, *De Hymnis in Solem sub Rege Amenophide, IV. Conceptis*, is a pupil of Erman.

THE NEW MUSEUM does not "sleep, like him at Philæ," but is in near expectation. It is to be built in the Kasr en Nil, or European quarter of Cairo, very accessible to the hotels, yet on the river bank, so that monuments can be unloaded direct from the barge or steamer into the museum. It is to be strongly built, with good passages and high vaulted rooms lighted by top side-lights. It is proposed to lay the foundations next April and May at lowest Nile, and to complete the structure in the fall of 1898. It will take about one year to

remove and set up the monuments, so that the new year of 1900 will witness, among other realized visions, the new museum with all its history and splendor open to scholar and tourist. It is simple truth to say that were it not for the English occupation of Egypt and the inestimable services of savants like Maspero and de Morgan, the year 1900 would never witness this precious consummation of our archæological hopes. Cairo will be one of the great centres of museumdom! It will be the Louvre and British Museum several times over, Egyptologically speaking.

The Metropolitan Museum in New York, the Museum of Fine Arts in Boston, the Archæological Museum of the University of Pennsylvania and the Chicago Art Institute have just received interesting objects from the site of Queen Hatasu's temple, donated by the Fund; the two former, mummy cases and "foundation deposits," and the latter museum foundation deposits. The president of the Chicago Art Institute, Hon. Charles L. Hutchinson, has been elected a vice-president of the Fund.

A leaflet states the receipts, expenditures and work of our society in the United States from the year 1883-4, when I assumed the honorary treasurership, to 1894-5. I quote these statistics:

Total circulars and notices, etc., printed.....	154,200
Total government envelopes 1888-1895.....	35,875
Total letters and notes.....	20,095
Total articles, letters, etc., for the press.....	2,467
Total American subscriptions and donations.....	\$71,385.21
Ordinary expenditures.....	8,200.92
Net.....	<u>\$63 184.29</u>

M. DE MORGAN has published in admirable form an account of his remarkable discoveries at Dashur. Forty photographic plates and nearly three hundred blocks in the text give views of the field of operations and the monuments, with plans and details, as well as the types of the jewelry and other objects discovered by him. His associates, M. Legrain and M. Jequier on the spot, and M. Bertholet, M. Loret and M. Fouquet formed a fine working staff of assistants to the ideal savant now presiding over the archæological treasures of Egypt.

OMBOS.—The scenes and inscriptions on the remains of this striking temple, which every Nile tourist sees, and which is a decided feature in the novel named "Kismet," are being published by de Morgan in his *Monuments and Inscriptions of Ancient Egypt*. So far there is nothing earlier than the Ptolemies in his reproductions from this poetical ruin.

CAPTAIN LYONS, a professional engineer and enthusiastic archæologist, is about to make a careful survey of Philæ, and

it is hoped that his profession will not overcome his love for the most beautiful ruin of all Egypt. The dam may be a necessity—a dam somewhere—but Philæ *must* remain!

THE IONIC VOLUTE may be a good terminus for my very business-like notes. Prof. W. H. Goodyear, of New York, has made this and cognate topics a profound study; but I now introduce Professor Richter, who spoke so learnedly at the Chicago Congress. He has just lectured before the Royal Society of British Architects on the Origin and Development of the Ionic Volute. He first gave a description of the three royal tombs discovered by him at Tamassos, in Cyprus. These sepulchres of a Græco-Phœnician type of architecture were, he maintained, of the seventh and sixth centuries B. C. A feature of peculiar interest in these subterranean stone buildings was the direct imitation in stone of constructions of wood, and this in a perfection which has never before been met with in remains of ancient monuments. Wooden columns, windows, locks, bolts, roofs, were all reproduced in stone. He had found their counterparts surviving in modern buildings of Cypriote villages. Dr. Richter then proceeded to give reasons for his conclusion that the Ionic volute derived from the Egyptian lotus-flower design and that the same origin was traceable in regard to the Greek palmette and anthemion. The theory which would ascribe the origin of the Ionic volute to the Assyrian sacred palm tree could no longer be maintained. A small clay model of the sanctuary—evidently a votive offering—discovered at Idalion, in Cyprus, some time ago, showed again the two lotus capitals on the columns supporting the porch. Some Hathor capitals discovered in Cyprus demonstrated the fact that Cyprian artists, during the Græco-Phœnician period, combined Egyptian, Assyrian, and Greek elements. On one of the columns was sculptured a design of a complicated lotus-tree with winged sphinxes. Dr. Richter next referred to Herr Koldewey, a German architect, who had put forward a new theory in his book "*Neandria*," distinguishing between three classes of archaic capitals with curved volutes—the first, with crossed lines, the Cyprian; the second, with vertical volutes, called Aeolian; and the third, with horizontal volutes, called Ionic. Those three he considered to be branches all growing out of the same trunk, which was of old Cappadocian origin and which he declared to be the prototype. Herr Koldewey denied any connection of the Ionic capital with Egypt or with the Egyptian lotus-flower. Herr Puchstein, in his book on the Ionic capital, appeared to be of the same way of thinking. The Cappadocian columns of a baldachino from a rock relief which had been put in evidence by the above-mentioned authors were extremely simple. The whole volute merely consisted of two spirals connected by a *canalis* and bent downward. In the upper line of the *canalis* of this Cappadocian capital, Koldewey saw the horizontal ten-

dency of the Ionic volute to be latent. The two spirals touched the vertical line of the shaft of the column, and in this fact Koldewey saw the vertical tendency of the Ionic volute in the same Cappadocian capital. Dr. Richter, however, had found, during the excavations which he had carried out for the German emperor, a small votive column even more regular and more simple than the Cappadocian column. The canal above was horizontal and was covered already by an abacus. The spirals also touched the shaft with their inner and lower parts in a more finished and regular form than in the Cappadocian example. He maintained that the columns from Cappadocia, Cyprus, the oldest archaic Ionic volutes from Olympia and other places were simplifications of much more complicated Græco-Phœnician volutes, which on their part derived from the Egyptian lotus. A reference to the architectural details of one of the three royal tombs of Tamassos showed how a complicated lotus-design was changed into a more simple form, and thus prepared the way for the formation of the Hellenic Ionic volute. From an interesting series of Græco-Phœnician Cyprian capitals, with palmettes over the volutes, to which Dr. Richter referred, he showed that the three types of capitals classified by Koldewey actually occurred in Cyprus. The Ionic volute, with its beautifully ornamented cymation, which belonged to the archaic temple of Diana at Ephesus, and which had been lately pieced together by Dr. A. S. Murray from fragments in the British Museum, he fully admitted to be the oldest existing example of a pure Hellenic Greek volute. He referred to Dr. Murray's paper, lately read before the Royal Institute of British Architects, showing the great importance of the Ephesian capital preserved at the British Museum, especially since its no less valuable twin-brother, the well-known Samian capital, had disappeared.

For a very delightful and thoughtful discussion of Egypt and Greek art I refer readers of the above abstract to the lecture by Miss Amelia B. Edwards in her "Pharaohs, Fellahs and Explorers," published by Harper.

THE HOUSE OF THE KUMUQUE.

BY GARDNER C. TEALL.

A long time ago—so long ago, in fact, that it happened once upon a time, there dwelt in a sea-coast village away up in the northland, where the short summers are overshadowed by the long, dreary winter-times, a great chief, whose name was Choot.

Choot was greatly beloved by his people, and so was his beautiful daughter, the Princess, for she was good and kind, never complaining, although her brother Chaoeh was often very unkind to her. This Chaoeh was not at all liked by the people—he was so selfish and surly—and they dreaded the time to come when he would rule them, as they knew he would not make a good chief.

One beautiful summer morning, having obtained her father's permission, the Princess went off through the woods to look for berries, accompanied by her two waiting-women. They had to walk a long distance in order to reach the berry grounds, and were so tired when they arrived that they lay down to rest and soon fell asleep.

Imagine their astonishment to find upon awaking, that some one had been there and picked all the berries whilst they slept. The Princess was very angry. She accused the Bears of playing the trick, never suspecting that it was her mischievous brother Chaoeh. However, she resolved not to go home with an empty basket, and so she and her women pushed deeper into the woods, taking no notice of the places they passed, until they had gone some distance. The Princess then became frightened, for neither she nor the others knew where they were. However, coming to a place where berries grew luxuriantly they forgot their anxiety and set about filling their baskets. The Princess picked in one place and the women in another. She had nearly filled her basket when, on looking around, she was startled at finding herself alone. The others were no place to be seen and the Princess thought they must have run away. The Princess called loudly several times, but there was only an echo-answer. Then she picked up her basket and started off hoping to find her way home.

She had gone but a short distance when her basket-strings broke and all the berries dropped out. Tired and frightened the Princess sat down upon the sod and wept. Suddenly three strange men jumped out of the thicket and stood before her.

"What is the matter, and why do you weep?" asked one.

"It is because I have lost my way and spilled my berries," answered the Princess. Then she told them her story.

"Come with us," said the man who had spoken first, "Come with us and we will take you to your father's house." So say-

ing they helped her pick up her berries, and off they started. On their way they passed over four trees that had fallen in the path. The Princess was quite sure that she was not being taken in the right direction, as she had never seen the logs before.

"I am sure we are going wrong" said she, "and I know I do not live so far away as you have brought me." But the only answer she got was the gruff bidding for her to be quiet, and she trudged along tearfully. Once the Princess looked back and was amazed to find that the four logs had become four high mountains. She was sorely afraid, but dare not ask any more questions of the men, and they soon arrived at a large village. The inhabitants were strangers to her, and at first she could not imagine where she could be, until from the conversation of the people she learned that this was the village of the Grizzly Bears, and that the man who spoke to her in the forest was the chief of the tribe. Then the Princess realized that she had been stolen and might never again see her home. All this made her very sad and she was heart-broken.

In a short time the chief of the Grizzly Bears took her to his house and there placed her in charge of an old woman. Seeing her weeping bitterly, the old woman took pity upon the Princess and tried to comfort her as best she could. The old woman told her that there was no doubt but the Bears had carried her off, to be revenged for the hard things she had said of them when she believed that they had come and picked the berries as she and her women slept.

The next day the Grizzly chief and all his men went out in canoes salmon-fishing, leaving the women to gather wood for fires that they might dry themselves when they returned wet from fishing. The Princess found that she would be expected to gather wood with the others, and they all started for the thicket. She picked up the dry sticks only and built her fire of them, but the others gathered the wet pieces and their fires sputtered and smudged.

In the evening the men returned and each shook his wet blanket over his fire. This caused it to flare up, but when the drops of water from the chief's robe fell upon the fire the poor Princess made, it was quickly extinguished. Of course the Grizzly chief was very angry, as every one laughed at him, and he threatened to beat the Princess.

That night when all in the village slept but the Princess, she could not sleep for grief, and wept aloud. This awoke the old woman, who stole over to her and again tried to soothe her sorrow.

"My child," she whispered, "I know that you are very sad and can never be happy among the Grizzly Bears, and as our chief has such a quick temper, I fear he may kill you for having built his fire with dry sticks, and for being the cause of his people laughing at him to-night. I have therefore resolved to aid you in making your escape and I know that you will not

betray me, else I shall be horribly tortured." Then the old woman gave her a comb of wood, such as the people used to comb out their hair, some oil and a pebble, saying to her, "To-morrow morning when you go out again to gather wood go well into the forest. Drop the first twig you break, and run the way its tapering end points. The Bears will probably notice your flight, and will pursue you. If they get too near, drop behind you this wooden comb; then keep straight on until you are nearly overtaken, when you must throw down the oil, and, as a last resource, the pebble." So saying, she pressed the Princess' hand and returned to her corner.

The Princess arose very early the next morning and was off for the woods before the Grizzly Chief was up. Breaking a branch from a tree, she dropped it as the old woman had bidden her, and ran in the direction its tapering end pointed. She had not gone far, when, upon looking around she was alarmed at seeing the Bears were in pursuit. By this time the Princess was upon the top of the first mountain; she was running back the way she had come the day before, but when she had reached the foot of the second, the Bears were so close upon her that she had only time to drop the comb behind, and to her great joy, a dense thicket of brambles sprung up between herself and her pursuers.

This gave the Princess the start for a while, but the Bears were very swift runners, and had nearly reached her again as she fled down the side of the third mountain, and then, upon dropping the oil, a large lake gushed forth. The Bears were obliged to go around this, and the Princess again had the start.

On and on she ran, but they were fast gaining upon her, so when she reached the foot of the fourth mountain, she dropped the pebble, and not a minute too soon. This time a craggy mountain reared itself behind her, and once again she was saved.

Running on, the Princess soon came to the coast of a great sea. Looking out upon it she beheld a man seated in a copper canoe, paddling towards her. As the Bears had reached the top of the mountain by this time, and were already coming down the side, the Princess called to the man in the canoe to take her in, telling him that if he did not do so, the angry Bears would kill her, so he paddled his canoe to the shore, and she stepped into it just as the Bears came rushing up. They were furious, and angrily demanded that the princess be given up to them. The man in the canoe said never a word, but paddled out. The infuriated Bears jumped into the sea, intending to swim out to the canoe, when the copper head of its prow opened, crushing and swallowing them, and thus was the Princess delivered.

Then the man in the canoe told the Princess to close her eyes, and throwing aside his paddles, he struck the side of his boat thrice, and it floated off upon the clouds.

When the Princess opened her eyes, she was surprised to find

herself in a strange land. Stretching before was the beautiful Country beyond Clouds, and the man told her that the house she saw by the bay was the House of the Kumuque and that he was the Kumuque himself.

He was very kind to her and took the Princess to his house. Then he told her that he had always loved her, and, although she had never known it, he had often seen her in her father's village as he passed over it in the clouds.

So good to her was the Kumuque that the Princess knew she would learn to love him very much, and so she consented to be his wife.

The Kumuque told her that his mother, who was generally absent during the day-time, was a witch and a very wicked woman. He also told his wife to be careful about being seen by the Bacbagalunuqserve or man-eater, as this witch was called, and so the Princess was concealed in a large blanket.

"If you hear any strange noises in the night," said the Kumuque, "do not stir, for if you do it will awaken the Bacbagalunuqserve and she will eat you up." Just as he had finished saying these words he rushed to his wicked mother. She demanded her supper, and he gave her four large fish and a seal. All these she greedily devoured, but was angry with her son because he had not more in the house for her to eat.

That night the Kumuque was obliged to go out upon the clouds in his copper canoe, and he had many misgivings at leaving the Princess alone so near his mother.

During the night the Princess heard many strange noises, like the rolling of the thunder, and she was curious to see whence they came, so forgetting her husband's caution, she looked out from under the blanket. No sooner had she done so than she uttered the most terrified scream, for there, issuing from the mouth and nostrils of the Bacbagalunuqserve, she saw great tongues of fire. The witch, awakened by the Princess' cry, jumped up and would have seized her had it not been for the timely arrival of the Kumuque, who, afraid that the Princess would forget his warning, had returned to make sure she was safe. Furious at his interference, the witch turned and would have slain her own son, but her robe caught fire from the flames she breathed and she was burned to a crisp.

After this the Kumuque and the Princess lived very happily together and not long after a son was born to them. Every day the Kumuque bathed the child in a stream flowing near his house. The effect of its waters was so miraculous that in one short summer the boy had grown to be a strong and handsome man. The Kumuque named his son Shagattyno, and the young man proved to be worthy of the name. He was very fond of his mother, and loved to listen to the tales she told of her old home and of her father and brother.

When he had become a little older, Shagattyno expressed a great desire to visit his grandfather, and his mother wishing to see her people once more, having expressed the same desire,

received permission of the Kumuque to set out on the journey, and taking a fond farewell of her husband, the Princess and her son stepped into the copper canoe and soon drifted down upon this earth.

Here after awhile the canoe came before the village where the good chief, Choot, still lived, and landing at the beach, first securing the canoe, the mother and son went up to the chief's house.

Choot was overjoyed on seeing his long lost daughter, and he ordered a great feast for the village. Choot was particularly pleased with Shagattyno, and many were the gifts he lavished upon that young man. In return for all the kindness his grandfather showed him, Shagattyno brought forth from the canoe four large baskets, so heavy that no one but himself was able to lift one of them.

From the first, he took out blankets of skins of seal and of sea-otter. From the second, all kinds of foods, such as they had used in the house of the Kumuque. The implements of the summer and winter dances lay in the third basket, and when the fourth, which he carried down to the sea, was opened, out rolled an immense whale.

Choot was so pleased on beholding all these things that he resolved to give up his rule to Shagattyno, and soon turned it over to the Kumuque's son.

Of course there was great rejoicing in the village, as the much disliked Chaoeh had now no claim to the chieftainship. He, of course, was exceedingly angry, but had to submit and step aside, for his father's will was law.

Everything went along smoothly until Shagattyno happened to displease his father, ever present, although invisible, by falling in love with Qweedass, a beautiful maiden of the Eagle tribe, and so, as a punishment, the Kumuque took the copper canoe from his son.

Then Shagattyno had to give up all his possessions, as now he was no longer the richest man in the village, and the old chief, Choot, being dead, he went to live in a poor hut at the end of the village. The Princess went along to take care of her son, for he had fallen ill and no one else would go near him. It was a long time before he recovered, and even then he had to shoot the little wrens which fluttered about, so that he might obtain food for himself and his mother. He made him a blanket of feathers, for nothing had been left him.

It made Shagattyno quite sad to be left in the world thus without another friend than his good mother. He knew his Qweedass would remain faithful to him, but he feared that he might never see her again. Very often would he sit out in front of the poor hut, listening to the birds singing around him. One night as he sat watching the peculiar actions of a loon hovering near him, he called his mother to him and said:

"Mother, I am sure that bird has something to tell me; he flies so near. I will speak to him." So he cried out to the

loon: "Loon, why do you act so strangely? Will you not tell me?" And the bird answered him saying: "Ah, yes, I will tell you, for I have longed to speak with you, my only friend, for I see that you are nearly alone in this world, too. I have something to ask of you, and although it will sound strangely to you, yet you must grant my request, for it is only by your doing this that I will be freed from a great enchantment. I ask that you shoot me as I fly past. That is all."

Shagattyno was greatly surprised at the strange request of the loon, but as the bird had pleaded with him so earnestly, he raised his bow and shot. When his arrow struck the loon, he heard a sound like the clink of metal. He stepped to where the dead bird had dropped, but no sooner did he touch it than the body turned into the copper canoe.

Shagattyno was overjoyed at recovering his canoe, although he felt sorry that he would not see the loon again, for he had become much attached to the bird in his long hours of loneliness. He cut the canoe in small pieces and carried them back to the hut and spread them out before the door, for his mother to look at. "See, mother," cried he, "see how rich we are now. See all this beautiful copper, and no one in the village has half as much." Then the Princess wept tears of joy, and she went with her son to the village to proclaim their standing to the people. Every one was amazed, and they asked themselves where he could have gotten so much copper.

As Shagattyno was now the richest man in the tribe, he was given back the dignities of chieftainship, whilst the ugly Chaoeh went off in a rage, and was never heard from again. From this time on, Shagattyno's people called him Chose, meaning a leader, and he soon after married the beautiful Qweedass, nothing marring their happiness until the death of the Princess.

Not long after this sad event, whilst Chose was out in his boat one day spearing, he saw a Sea-otter which was as white as snow, and after a lively chase he succeeded in wounding it, taking care to spear the Sea-otter in the flapper so that no blood would run and stain the skin, for he wished to preserve it.

Having killed the Sea-otter, Chose towed it to the shore and skinned it, and left it for Qweedass, who was by, to clean while he ran up to the house to dry his blanket.

No sooner had Qweedass waded out to dip the skin, when she felt herself being lifted up, and, looking down, was horrified to see that the skin of the Sea-otter had turned into a Fin-back Whale, and that he was swimming off with her. She screamed for help, and Chose, thoroughly alarmed, jumped into a canoe with two men and paddled out in pursuit.

The men had nearly reached the Fin-back Whale when down he dived into the depths of the sea, carrying poor Qweedass with him.

Chose was not the kind of a man to give up in despair, so letting himself into the water by means of a rope of twisted

cedar bark, after telling the men to haul him up when they felt some one pulling, he disappeared.

In a short time Chose reached the bottom, and found himself in another world. The first people he met were the Ducks, and in response to his inquiries, told him that the chief of the Fin-back Whales had just passed by with a new wife. These Ducks were blind, and so in return for their information Chose cut holes in their heads that they might be enabled to see, but he was in such a hurry that he cut one hole smaller than another, and this accounts for a duck having one eye smaller than the other.

Passing on, Chose came to where the Crane, watchman of the Fin-back Whales, stood guard. The Crane, perceiving the approach of a stranger, cried out the alarm, but Chose, by hurried explanation, persuaded the Crane to hide him under his wing, thus when the Whales came up to see what the matter was no one was to be seen, and the Crane told them that he had been asleep, and was having bad dreams, so the Fin-back Whales left him, and Chose crept out from his hiding place, not forgetting to give the Crane some Indian tobacco, as a reward for his kindness.

The Crane was much pleased with this present, and he told Chose that in order to recover Qweedass, he must first make friends with the Sea-lion, Tan, who was a slave of the Whale chief, and into whose keeping Qweedass would, for a time, be given. Thanking the Crane for this information Chose passed on.

Entering the woods Chose saw Tan approaching with axe thrown over his shoulder. He had come out to cut wood from the hollow logs lying about. In one of these hollows Chose crept and there concealed himself.

It so happened that Tan chopped first at the log wherein lay Chose, and when he had cut through the rim and had raised his axe to strike again Chose placed a stone in the hole, and when Tan's axe came down it was broken by striking it.

This made the Sea-lion feel very bad, for he knew the Whale chief would punish him severely.

He had picked up the pieces and was turning away when Chose slid out unobserved and stepping before him said:

"What is the matter, Sea-lion?" and showing him the broken axe, Tan answered saying:

"I have broken my master's stone axe and he will punish me for it severely when I return."

"Ah, that is nothing," exclaimed Chose, "I will mend it for you." And he glued the pieces together so cleverly that no trace of their juncture was visible.

"How can I ever repay you?" asked the grateful slave.

"By helping me to recover my Qweedass," replied Chose, and then he related to the Sea-lion what had passed.

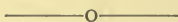
"I will help you as best I can," said Tan when Chose had finished, and he told him that the chief of the Fin-back Whales

intended to boil Qweedass in a kettle, and that he himself had been sent to fetch wood for the fire and the water. He told Chose, however, that as soon as he entered the house where the fire was built he would agree to stumble as though by accident and that would cause the water to be thrown upon the fire, putting it out, while Chose was to carry Qweedass away.

It all turned out just as the Sea-lion had arranged, and when the fire was put out, Chose seized Qweedass and ran back to the rope with her.

Tan pretended to give chase, but he managed to let Chose first reach the place where the rope hung down, and he and Qweedass were drawn up into the canoe, whence they reached the village in safety and were greeted amid great rejoicings.

Chose and Qweedass are living there still—so they say, away up in the Northland.



Correspondence.

A VISIT TO THE INDIANS AT CAPE FLATTERY.

Editor American Antiquarian:

I have just returned from a two weeks' visit to the "Makahs" at Cape Flattery. I find there the flat-roofed communal house, which is as like the pueblos as you could expect the wooden house to be. It is, in fact, a one-story pueblo—ladders and all. This type of house was widespread on Puget Sound and from the Columbia to Alaska.

I also secured three more very rare whale-bone war-clubs, or as the name is rendered in the "Wakashan" stock of language, "*Chee-toolth*."

I also paid a couple of days' visit to the Indians on the west coast of Vancouvers Island, and then, returning to Cape Flattery, walked down the beach from that point to Grays Harbor, visiting all the Indians en route, so that I have quite a mass of new notes, which I will be able to utilize in time. I intend to return to Cape Flattery in December, when they hold their annual dances, with a first-class photographer, and expect then to get material for many valuable articles. I am much struck with their "pueblo" life, their worship of the sun, and the part that thunder and the lightning, rainbow, etc., play in their mythology. Their wonderful skill as boatmen, too, is astonishing. They go out upon the ocean in their great canoes, and kill whales, seal, sea-lion and sea-otter; they have long visited the halibut banks; in fact, they are an extremely interesting people.

I am, very respectfully,

JAMES WICKERSHAM.

SYMBOLIC CARVINGS OF THE MOUND-BUILDERS.

BY F. W. PUTNAM.

[Abstract of Paper published in *Popular Science News* for January, 1896.]

At the Springfield meeting of the American Association for the Advancement of Science, Prof. Putnam read a paper upon the Symbolic Carvings of the Mound-builders. The abstract has been printed and we take the occasion to reprint it. He controverted the theory advanced by some writers that the ancient earth-works of the Ohio valley and southward are of comparatively recent origin, and were made by the immediate ancestors of the Indian tribes living in that region three centuries ago. The belief forced upon Prof. Putnam, by continued archæological research in the field for more than a quarter of a century, as well as by study of the human remains and works of man found in the older earth-works and mounds, is that the people who made the great earth-works and the burial mounds associated with them were a branch of the great southwestern people, represented by the ancient Mexicans, the builders of the old cities of Yucatan and Central America, and some of the Pueblo tribes of Utah, Colorado, Arizona and New Mexico and adjoining portions of old Mexico. He also believes that the customs and some particular ceremonies and phases of art found among the living tribes to the northward and eastward of this great region were simply survivals by contact of these tribes with the shorthheaded peoples of the southwest, of which the old earth-work builders of the Ohio valley were one extreme branch. In this connection he emphasized the necessity of distinguishing between the older of these earth-works and the burial mounds and village sites of the intrusive tribes from the northward and eastward.

The particular object of this paper was to illustrate some of the peculiarities of the incised art of this older people of the Ohio valley and to point out the close resemblance in the motive of the symbolism expressed in the carvings from this region with those of the southwest and even Central America. At the same time attention was called to certain remarkable resemblances in the technique of some of the similar work of the Haidas of the northwest coast of America. The paper was illustrated by a series of diagrammatic figures, showing peculiar and in some ways extraordinary carvings; and another set of drawings illustrated the carvings of natural size.

The objects illustrated and studied were arranged in three groups. First, the famous Cincinnati tablet, found within a mound in Cincinnati in 1841, over which there has been so much

controversy and so many different theories as to its meaning. Second, the objects which were found in the great group of mounds surrounded by an earth-work, known as the Turner group, which was most thoroughly explored during ten years of continued work by Prof. Putnam and Dr. Metz and several assistants of the Peabody Museum of Cambridge, where these objects are now preserved. Third, the remarkable lot of specimens from the earth-work figured and described by Squier and Davis as the Clark work, but later known, from the present owner, as the Hopewell group. These objects were secured by Mr. W. K. Moorehead while acting as Prof. Putnam's assistant in obtaining material for the exhibit in the Department of Ethnology of the World's Fair, of which department Prof. Putnam was chief. This collection is now preserved in the Field Columbian Museum of Chicago.

The first specimen to which attention was called was that of a portion of human femur which had been scraped and rubbed to a high polish, and on this rounded surface intricate figures had been incised. At first it was difficult to recognize in the apparent medley of lines any intelligible design, but after studying the lines for a while they resolve themselves into human and animal faces, combined with ovals, circles and other symbolic designs. A prolonged study of the carving shows that the figure is made up of elaborate masks and combined headdresses. The discernment of these several faces and headdresses, represented in the combination figure, is made easier by a comparison with several other objects found in the same mound. Among these are numerous designs cut out of thin sheets of copper, made by hammering nuggets of native copper. Among these are the serpent and sun symbols, also shown in the carvings. Another copper object represents the deer's antler. In the same mound a skeleton was found about which were many ornaments; and still resting upon the skull was a copper headdress made of a sheet of copper-curved to cover the head from the forehead to the occiput; and from this branched a pair of antlers, made of wood and covered with thin copper.* Still another object was that of a similar sheet of copper through which was thrust two short, rounded pieces of wood, representing the antlers of the deer just starting in their growth. Prof. Putnam called attention to the fact that a comparison of these two headdresses with the figure carved upon the human legbone showed that two of the figures in this combination represented two masks or human faces surmounted with just such headdresses—one with the bud-

*On one of the bodies which was exhumed from this graded section is illustrated by Mr. Moorehead in his book on *Primitive Man in Ohio*. It is impossible, however, to tell from the book or from the article here quoted whether the large number of so-called spool ornaments and the other black rings called pulleys, and the duck pipe which is made out of the same material, came from this mound, and if from this mound it is impossible to tell whether they were connected with the body of a chief or with the skeleton of a child or young person. The whole description given by Mr. Moorehead is very vague and indefinite.

ding antlers, the other with the full formed antlers. He then showed that these were not all the faces shown in this singular combination of lines. There was also an animal head with a broad mouth, closed eyes and drooping ears; while in the center of the design was to be seen the beak of the Roseate Spoonbill—a bird often represented in similar incised carvings from the mounds. Particular attention was called to the way in which the eyes were represented on the human face, with the double curved projecting lines which has much to do with many of the symbolic carvings which were described.

Prof. Putnam then alluded to a similar carving, but with different designs, upon a human arm-bone, obtained with thousands of other objects from the altar of the great mound of the Turner group. On this carving there are several conventional animal heads interwoven and combined in a curious manner; and over each head are represented the symbolic designs, circles and ovals, common to nearly all the carvings. Here the lines were cut with such skill and ingenuity that parts of one head form portions of another above and below; and on reversing this combination figure still other heads are discernible. The many combinations here shown, he said, could only have been made by carefully preparing the distinct figures, and combining them in the way here shown, which must have required a vast amount of ingenuity as well as mechanical execution.

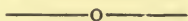
Another of these interesting carvings was from the Hopewell mound, and was also upon the highly polished surface of a portion of a human femur. In this the principal designs are the conventionalized serpent and the bear totem, represented by the five claws; while other designs are the same in outline as some of the great earth and stone works in the Ohio valley—particularly the outline of the so-called "Stone Fort" in Ross county, and the so-called "Entrance" to the earth-work in Butler county, figured by Squier and Davis.

Prof. Putnam dwelt particularly upon the figures carved on the stone known as the Cincinnati Tablet, and he showed how the strange figures there delineated were both conventionalized and symbolic, the serpent head being one of the symbolic designs of the tablet. This tablet, he said, has been described by several writers during the last half century, and has often been considered as a fraudulent piece of work; but of its authenticity there can now be no doubt, as the figures upon it are partially understood, and several of them are of the conventional serpent form, identical in form with those found in other mounds of Ohio, and also agree essentially with the representation of the serpent head in the sculptures of Central America; while the singular duplication of the parts recalls a similar method in the carvings and paintings of the Haidas of the northwest coast of America. He considers that the combination of the human and

serpent forms in this tablet makes it a most interesting study in this new light.

In connection with a study of this tablet attention was drawn to a very interesting object of copper found in the Hopewell mound. Many comparisons were made between these two objects, which, unlike as they seemed at first glance, were shown to have identical lines evidently representing the same symbolic figures. Another object shown was a serpent cut from a piece of mica, upon which were incised lines representing the same symbols found on the carvings on bone. This was from the Turner mound. In connection with this representation of the plumed serpent, the authors of the paper make many comparisons, showing the modification of the serpent in ancient art, from Ohio through the Pueblo regions to Mexico and Central America. The peculiar representation of the eye of the serpent is also dwelt upon, this eye becoming symbolic of the serpent itself. Several objects from the mounds are simply these symbolic serpent eyes, and attention is called to the persistence of this symbol from Ohio to Central America.

The next group of symbolic carvings described was that of the circle divided by the four arms, representing the horizon and the four quarters of the earth. Attention was called to the wide spread of this symbol over North America; common to the carvings of the mounds, it extends westward to Mexico.



THE HOPEWELL FIND.

BY W. K. MOOREHEAD.

In 1847, in the first publication of the Smithsonian Institution, Messrs. Squier and Davis give an account, together with several illustrations of a large enclosure and numerous mounds on Paint Creek. The enclosure was then owned by a Mr. Clarke. His heirs sold it to Mr. Hopewell a few years ago, and, on account of the wonderful finds and the kindness of the present owner, the survey has named it "The Hopewell Group and Enclosure." The fork of Paint Creek referred to by Messrs. Squier and Davis flows half a mile to the south of the camp.

The embankments of the enclosure average four feet in height and twenty feet in width. They have been considerably reduced by cultivation. The distance around the walls is one and three-fourths miles. One hundred and eleven acres are enclosed, on which lie twenty-six mounds and an extensive village site. To the east there is a perfect square, 850x850 feet, the west side being formed by the east side of the main enclosure, as will be seen by reference to the accompanying diagram.

All of the twenty-six mounds above mentioned were carefully

examined. Photographs and drawings were made of every skeleton which was surrounded by ornaments or objects, of the various colored strata in the mounds, the altars, and other things of interest. It is the purpose of this paper to describe only one of the mounds explored: the large one indicated in the center of the accompanying plan, around which there is a semi-circular embankment.

Seven thousand two hundred and thirty-two unfinished flint implements, averaging in size 5x7 inches and half an inch in thickness, had been deposited in Mound No. 2, in the form of a layer 20x30 feet and one foot in thickness. This was the most extensive deposit of implements employed by primitive man ever discovered, but, while rivalling in quantity the objects in the Effigy Mound—also located here—in importance it cannot be assigned first place.

The Effigy Mound is 500x210 feet, with a height of 23 feet, and resembles externally the human trunk. On account of its great size the expedition was compelled to open it in seven sections, each 60 feet in width. The greatest diameter of the mound is east and west. The cross sections were run north and south, and were, therefore, about 200 feet in length, with walls of earth at the center 23 feet high, which gradually sloped toward the ends until they reached the original surface beyond.

Before giving a description of the finds in each cut, it would be well to speak generally regarding the construction of the mound. The builders first selected a level strip of ground, cleared it of underbrush, weeds and grass. They then took clubs or other heavy objects and beat the earth until it was hard and flat, and filled all the little depressions and hollows. The floor being thus far prepared, they built large fires upon it and kept them burning for several days.

All the skeletons taken from the mound, with the exception of one or two, lay upon this hard burnt floor. The mound was erected in eight or nine sections and considerable time elapsed between the completion of one and the beginning of another. When a mound has stood a number of years it becomes covered with underbrush and small trees. If the aborigines decided to make further interments, instead of constructing a new mound, they frequently used the old one. They placed the bodies upon the surface of the ground at the base of the first one and heaped earth above until either the first mound was covered or a structure was formed nearly equaling it in size. The decay of underbrush and logs leaves a dark line between the two mounds, conforming to the contour of the first. This is called the sod line.* Such sod lines were apparent in the Effigy Mounds. In

*The facts which Moorehead brings out about the gradual enlargement of a burial mound is important. It only confirms what the writer has often advanced; but it here explains some things which would otherwise be difficult to account for, especially the diversity of relics found in the mound.

cut No. 1, which was projected through the eastern end of the mound, nothing was found except near the summit. Boulders had been laid about two feet below the summit of the mound extending down the south slope of the structure for a distance of forty feet. They were thought at the time to represent the figures of two panthers. The effigies*—if they were intended to represent effigies—were very rude, and while the tails were clearly defined and one or two legs apparent, the head and fore legs had been disturbed by the plow to such an extent that it was impossible to follow them. Boulder mosaics are occasionally found in mounds, particularly in Wisconsin, but their occurrence in the Ohio valley is extremely rare.

In cut No. 2, thirteen or fourteen skeletons were exhumed from the base line. The most important of these was recorded as Skeleton No. 248. It lay with the head to the south, and was five feet eleven inches in length, and fairly well preserved. No skeleton in the mound indicated a person of more importance than No. 248. Copper antlers, 22x23 inches, extended from the forehead upward. The breast and back were covered with copper plates, bear teeth, and other singular ornaments. Strings of beads lay about the ankles and wrists, while at the feet were traces of decayed sandals. The copper horns had been originally fastened to a helmet of copper, covering the skull from the upper jaw to the base of the occipital. A rough cloth skirt extended from the waist to the knees. Where the copper plates came in contact with the fabric it was well preserved. Beautiful pearl beads and large bear and panther tusks were interlaced or strung upon the front of the garment. The other skeletons were covered with shell beads and a few copper plates and celts accompanied them.† In cut No. 3 a number of bodies were found surrounded by large ocean shells (*Busycon* and *Pyrula*), plates of mica, lumps of galena, stone pipes, spear-heads, and beads. In the centre of the cut upon the base line a deposit of two hundred copper objects and implements was laid. The deposit covered a space 6x10 feet. Among the objects found were an enormous copper ax 22½ inches long and weighing 38 pounds, and copper plates or square sheets of copper used for ornamental purposes. With the deposit were 25 000 pearl and shell beads. Accompanying the copper implements of the more ordinary form were anklets, bracelets, combs, saucers, several fish and suastika and crosses. The discovery of four crosses, which are peculiarly oriental in character, marks a new epoch in American archæology. M. G. de Mortellet, the eminent French anthropologist, refers in his works very generally to the same style

*These effigies were pointed out by gentlemen from Washington who were visiting the spot.

† A cut representing this skeleton and its novel helmet is given in Moorehead's book and in the *Illustrated American*. A reproduction of the last can be seen in the plate.

of cross found by the survey, and gives numerous illustrations in his works of its occurrence on pottery, sepulchres, and monuments of Brittany, Italy and, particularly, India. The Suastika was used as one of the emblems of Buddha worship before the Christian era, and may have spread later into Phœnicia. This symbol is occasionally found in Egypt and China, but, so far as the writer is aware, not in Yucatan or Mexico. A cross does occur on the Palenque tablet, but it is not the Suastika.

The crosses and the other objects were worked from sheet copper which had been beaten thin in a cold state and not rolled. All the copper was placed in a layer several inches above two badly decayed skeletons. Many of the bones of the skeletons were badly decayed, and the few entire ones were covered with dendritic deposits. Twenty-three feet below the surface, with alternating layers of compact clay and coarse gravel, their decay is unquestionably due to age and not to the action of atmospheric agencies. The copper crosses and effigies were at first thought to be modern; in fact, we would not say positively at the present writing that they are ancient. But if the field testimony is of value (and the survey has had such experience that it is hardly probable its members are easily deceived), it is certain that the objects evince a degree of workmanship beyond the ability of the two tribes of people that inhabited Southern Ohio in pre-Columbian times. This is admitted by even those who are of the opinion that the objects were made by the early traders and trappers who came in contact with the Indians of the Ohio Valley one hundred and fifty years ago. Probably not one of the traders ever heard of the Suastika cross. That the early French met the Ohio tribes on the shores of Lake Erie, in Illinois, and at Fort Duquesne long before the Ordinance of 1787, opening the territory of the Northwest for settlement, is quite true.

That they should have made copper fish, combs, anklets, etc., strangely like the Etruscan and Phœnician designs, and crosses the duplicate of those used so extensively in India is hardly possible. No race of American aborigines were quicker to employ the superior implements and more beautiful ornaments of the whites than the Indians of the Ohio Valley. Had they secured these crosses from the whites they would have undoubtedly buried glass beads, iron tomahawks, medals, and other evidences of European influence, with their dead. The whites would not have issued to the Indians a singular and purely religious oriental emblem and have omitted to present mirrors, beads, and other flashy and more acceptable gifts.*

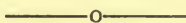
The copper crosses constitute the first authentic find which

*There are among the relics in the Field Museum at Chicago not only these oriental symbols, which may be called Phœnician, Etruscan, Trojan, or East Indian, but there are also among them symbols similar to those common in medieval Europe and still common in cathedrals. Crosses in the form of the letter X combine with figures resembling the leaf of the clover, as well as fish, which are Christian symbols.

casts a certain light upon the origin of man in America. When the voluminous field notes and the numerous photographs of the present survey shall have been carefully examined by those competent to judge, and the proper investigation made of the same symbol abroad, the writer is confident that the conclusion which he has ventured will be substantiated.

The work continues, at present writing, upon the sixth and seventh cuts in the Effigy Mound. Skeleton No. 176* was found in the small mound numbered 20 on the survey map. It was accompanied by many interesting objects, all of copper.

Judging from the large number of skeletons interred in the Hopewell Group, one of the most powerful tribes of Ohio aborigines lived within the enclosure. Upon the site of their lodges or teepees we have found many ash-pits, fragments of their cooking vessels, broken and unfinished implements, and bones upon which they have carved fanciful designs. An inspection of their crania shows them to be of the short-headed or brachycephalic type. We find that they employ mica from North Carolina, copper from Lake Superior, obsidian from the West, fossil shark's teeth from the Florida and Carolina coasts, shells from the sea shore, and other things from a great distance. The field notes from the survey, when published by Mr. Putnam, will go far toward solving questions concerning the manners, customs and habits of primitive man in the Ohio valley.—*Illustrated American*, April, 1892.



Editorial.

THE HOPEWELL FIND AND ITS MYSTERIES.

We have published in this number the abstract of Prof. Putnam's paper read at the Springfield meeting, taken from the *Popular Science News* for January;† also Mr. W. K. Moorehead's account of his remarkable find in the Hopewell mounds. We put these two together because of the discrepancy which appears in the two articles. Prof. Putnam takes the position that the symbolism contained in the relics of the Hopewell mound is the same as that in the Turner mounds, in the Cincinnati Tablet, and the copper relics from the Etowah mound. Mr. Moorehead says nothing about the symbolism of the bone relics which he discovered; though he describes the copper relics and speaks of the oriental character of the suastika and some other symbols which may be recognized, and intimates that this is the first time that the suastika had been seen among the mounds. This is not

*Many objects were found with this skeleton, some of them being as follows: A, copper crescent; B, copper celt; C, beads; D and E, copper celts; F, beads; G, copper spool-shaped object; H, copper band around right ulna and radius. See Plate, lower part.

†An account of Prof. Putnam's paper is published in the *Bulletin of the American Geographical Society*, Vol. XXVII, No. 4, 1895, p. 355.

true, though it is perhaps the first time that it was cut into copper. Mr. Moorehead, however, admits that there have been many doubts as to the prehistoric character of the copper, mica and other relics which were taken from this mound. This doubt has been increased from the examination of the relics which are now in the Field Columbian Museum, having been returned from the Peabody Museum, to which they were taken. It has been two years and more since opportunity has been given for the public to see and examine these relics in their totality. In the meantime the study of the symbolism has been conducted by the curator of the Peabody Museum. There has been considerable inquiry about the relics and a desire to know the nature of the symbols which were so minutely engraved upon the bone relics. The inquiry has been in a degree answered, but there is still a mystery about them.

The symbols on the copper relics strangely resemble the symbols which were common in mediæval times in Europe, especially the copper sheets which were cut into the shape of the old-fashioned Maltese cross in combination with the clover leaf. The cross is in the shape of the letter X and was common before the Christian era, but the clover leaf is modern European. We say nothing about the composition of the relics in the shape of pulleys, nor the strangely uniform, stereotyped shape of the spool ornaments, which make them look as if they were stamped; nor of the flat pieces of copper with turreted edges, all of which look as if they were cut by a sharp knife or chisel, and all at one time, or the vast quantity of copper which came out of the mound.

We only ask one question: Why do the symbols on the bone implements appear so ancient and the symbols and other art forms on the copper relics appear so manifestly modern? We have tried our very best to follow up the description of the finds given by Mr. Moorehead, both in his book and the *Illustrated American*, and identify the different finds with the different mounds, but it seems almost impossible to bring order out of such confusion.*

The question now is, Were these bone relics taken from a mound older than the copper relics, or were they not. The report of the commissioner-in-chief of the Department of Anthropology at the Columbian Exposition has not been given, and we do not know that it ever will be. Still the public is entitled to the information. We will ask the parties who know most about this find to clear up the mystery, or at least state the facts intelligibly, so that we can get some clue to it.

*The book which Mr. Moorehead was writing in the field seems to have been finished before the exploration ceased. There is no mention in it of the great number of spool ornaments, or of the peculiar duck pipe, or of the pulley, which strike the eye so strangely, and it is difficult to decide from what part of the mound these singular relics came, or to locate any of these finds definitely. We judge, however, that the bone relics were taken out from the Mound No. 1, near the "dug hole," "where a man was kept at work for three weeks," the same mound from which Squier and Davis took out so many rare relics.

BOOK REVIEWS.

Recollections of Life in Ohio, from 1813 to 1840. By Wm. Cooper Howells, with an Introduction by his son, Wm. Dean Howells. Cincinnati: The Robert Clarke Co. 1895.

The recollections of a man who has always been in private life, and a large portion of his days in very humble circumstances, are contained in this book. The man was honest and amiable and brought up a worthy family. He had one son who has made a great reputation as a writer. This fact and the habit of making a record of the common-place event; which occurred in quiet communities, will account for the preparation of the book. It is perhaps owing to the fact that his life covered a period when the families on the Ohio river were struggling with poverty, and society was in the process of formation that it is published; and yet thousands of other men could repeat the same story with variations.

It is well that such recollections should be photographed, and that we should not depend longer upon the ordinary means of perpetuating, such as memory, family affection, and common conversation. "Our names are writ in water." "When the water proves to be a stereotype, every one's name and life will be known."

This Goodly Frame, the Earth. Stray Impressions, Scenes, Incidents in a Journey touching Japan, China, Egypt, Palestine and Greece. By Francis Tiffany. Boston and New York: Houghton, Mifflin & Co. 1895.

A trip around the world with a mind full of sentiment, as well as with eyes capable of seeing, has resulted in an interesting book. The writer is very imaginative, but his comparisons are closely connected with what he sees, thus making a sort of double vision. The journey through Japan, China, and the other lands seems to have made impressions such as perhaps would be felt by any intelligent and scholarly traveler; but every one would not be so capable of expressing the thoughts which might arise. The writer is full of admiration for Japan, "the land of the rising sun;" but was disgusted with nearly everything in China. Pleasant impressions return when he reaches Borneo and Ceylon and rise to *rhapsody* when he mounts the Himalayas and gets a vision of the "treasuries of the snow."

There are a few words about Benares and its customs; a chapter on Lucknow and Cawnpore and the terrible tragedies which occurred in Havelock's time. There is a picture of the Tartar or Mongolian race as compared with the Aryan; a sketch of the beauty of the architecture of the Pearl Mosque and the Tagamæhal; a short sketch of Delhi, the Rome of India.

Egypt is called the "sun-scorched land" and the "land of the rod." The patient digging of brave archæologists is referred to. They alone lifted the "veil from the mysterious Isis." The temples of Egypt are described from *Jaffa* to Jerusalem and the sacred cities fill a chapter. *Baalbeck* and *Damascus*, *Smyrna* and the *Parthenon* are also brought before us in the panorama. There is a charm about the style of the writer which matches well with the beauty of the scenes which are visited. The book is, in fact, so fascinating that the reader is not likely to lay it down until he has gone around the

world with the author and learns what he has to say. It is better than a lecture, attended with stereoscopic views, for the word pictures and the impressions of the author blend together—each of them having a brilliancy which resembles a kaleidoscope, but with far more system and significance. The title hardly conveys an idea as to what the book was intended for; but the sub-title, "Stray Impressions of Scenes," expresses exactly the thought which is gained by the reading.

Essays on Scandinavian Literature. By Hjalmar Hjørworth Boyesen. New York: Charles Scribner's Sons. 1895.

Prof. Boyesen, whose recent death is lamented, has written a sketch of 300 pages on Henrik Ipsen. He says in the chapter that *Bjornson* was in danger of expanding to similar proportions; but by heroic efforts he saved it from being a memoir of one person, and has given sketches of the weightiest and most representative writers of Norway and Denmark. Still the best part of the book is contained in this chapter. At least we are made familiar with the writings of Bjornson, and have a fair sketch of his life and character. Scandinavian literature was, in fact, better represented by him than by any other of the persons whose life work is sketched.

The following is the portrait; calm, strong and nobly aglow with love of the country, he has no need of going into paroxysms in order to prove his sincerity. For five years he published nothing of esthetical character, but plunged with hot zeal into political life and unfolded colossal activity. He lost his childhood's faith, but he developed an originality of thought. A review of the various dramas and poems and other writings is given in the chapter. We are made acquainted with recent Scandinavian literature in this way. The second part of the book is occupied with sketches of Norwegian and Danish writers, such as Jonas Lie, Hans Christian Andersen, George Brandes and Esias Tegner.

Out of the East. Reveries and Studies in New Japan. By Lafcadio Hearn. Boston and New York: Houghton, Mifflin & Co. 1895.

There have been a great many books written about Japan and the Japanese within the past few years—each one from a different standpoint. Mr. Hearn, the author of this book, has given to us a different view from any other. It is the inner life which he seeks to bring before us.

He begins with one of the folk tales—the story of an old man and his wife who renewed their youth. He next gives us a series of simple reminiscences, furnished by a number of young students, which reveals the inner life of childhood. The next chapter is occupied with the "ghostliness that seeks expression in the universal green of the landscape". The "feminine character" is the subject of the fourth chapter. "The innermost intimate life of the family is never revealed, all that you see will be refined, courteous and exquisite; but of the relation of the souls to each other you will know nothing." Behind the beautiful screens which mask the interior all is silent, gentle mystery. The next chapter brings out a darker picture. Under the submissive sweetness of the gentlest Japanese woman there exists possibilities of hardness, absolutely inconceivable. The following is the comparison: A pretty little box contains a beautiful silk bag, you open this and see within another bag of silk, very fine; open that, and lo! a third, and a fourth, even a seventh, all of them equally rich; but the last one contains

the strangest, roughest, hardest piece of Chinese clay that you ever beheld. "The centuries of the highest social culture have wrapped the Japanese character about with many priceless soft coverings of courtesy, delicacy, patience, sweetness and moral sentiment; but underneath these charming multiple coverings there remains the primitive clay, hard as iron."

The influence of Buddhism does not seem to have helped the character of the Japanese. The stone Buddha is calm, placid, immovable. There is a smile upon the face. No shadows, nothing to disturb; but the fountains of life and love are not touched. The influence is to make the character passive; but the best qualities cease to flow. The author says no oriental priest has ever yet been converted to Christianity and the chances of making Christianity the native religion grows less and less. But no one can well predict what may occur in the future in this respect. The awakening of mind will certainly lead oriental nations to throw off the incubus of Buddhism, and notwithstanding the "ancestor worship" which is so prevalent, the doctrine of the transmigration of souls and the Buddhistic doctrine of Nirvana must give place to the brighter and better hope of the resurrection and the progressive life of the individual soul hereafter.

An Account of Palmyra and Zenobia, with Travel and Adventures in Bashan and the Desert. By Dr. Wm. Wright. Thomas Nelson & Sons, New York, 33 East 17th street; London and Edinburgh. 1895.

The view that is given of the ruins of Palmyra in this book is well worthy of close study. The author, to be sure, has not undertaken to describe the ruins or to analyze the architecture contained in them; but has left this for the reader to do as he shall look upon the different illustrations which are furnished by the publisher. All that he undertakes to do is to give a narrative of his journey to Palmyra and its various incidents. The history of Zenobia, who was the queen of Palmyra in its palmyest days, was very tragic and ended in the complete subjugation of her empire and subjecting her to the terrible mortification of being placed as a captive in the triumphal procession and her subsequent death. The following is a description: "Aurelian rode in a magnificent chariot, which he had taken from the king of the Goths, and the chariot was drawn by four stags, which the emperor, on his arrival at the capitol, sacrificed to Jupiter Capitolinus. Twenty elephants, two hundred wild animals, including tigers and elks, and eight hundred gladiators marched before him, accompanied by the treasures of Zenobia and the spoils of Palmyra; there were also captives from the different peoples whom he had conquered, and ten Gothic women in complete armour. The carriage of Odainathus, overlaid with gold and silver and studded with precious gems, was there, and a splendid carriage, the gift of the king of Persia. But the object which gave to the procession its crowning interest was the captive queen Zenobia. Every window, balcony and roof was crowded by the maids and matrons of Rome to catch a glimpse of the oriental woman who had contended with Rome for supremacy." Zenobia, in the days of her pride and power, had caused a splendid chariot to be built, and it was said that she had declared she would enter Rome, a conqueror, in that chariot. The Roman crowd saw the graceful and beauteous lady tottering through the streets on foot, in front of her own chariot, not in it, her hands bound with golden chains and a golden chain round her neck. Golden rings were round her ankles, and slaves supported her, as, laden

with jewelry, she staggered wearily forward in front of her conqueror. Behind, the senate and victorious army completed the show. On that day Rome enjoyed her grandest triumphal procession and reached her deepest degradation. In all the annals of perverted patriotism and abused power there is no more brutal spectacle than the triumph of great and imperial Rome over that humbled and helpless queen.

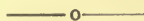
The Expedition of Zebulon Montgomery Pike. To Headwaters of the Mississippi River. Through Louisiana Territory and in New Spain, during the years 1805-6-7. A new Edition with Copious, Critical Commentary and Memoir of Pike. By Elliott Coues. In Three Volumes. New York: Francis P. Harper. 1895.

Pike's expeditions were the first military explorations into the newly acquired territory of Louisiana. They are inseparably linked with those of Lewis and Clarke in the beginning of the history of the Great West. His first expedition was in 1805-6, from St. Louis to the headwaters of the Mississippi River and return. His second was up the Missouri to the Osage, across to the Arkansas River. From thence into Colorado as far as Pueblo, and from thence to the vicinity of Leadville and back to the Rio Grande, where he was captured by Spanish dragoons and taken to Santa Fe. The original editions of Pike's expeditions have become scarce—this is the first reprint, but so much new matter has been added that the single volume has been extended to three. All of the plates in the original edition have been reproduced. They consist of a portrait of the author and six maps. Mr. Francis P. Harper, the publisher, has set no limit to the extent which the editorial work might be protracted. This was doubtless gratifying to the editor himself, and he has made the most of the liberty bestowed upon him, giving a vast amount of notes on a variety of subjects. It appears that Pike, after his escape from his Spanish captors and return to his native land, began to write his book; but it would be hard to match the disorder in which his materials were set forth in print. He plagiarized freely from Humboldt, and even produced one of Humboldt's maps as his own. The editor, Mr. Elliott Coues, who signs himself as late captain and assistant surgeon of the U. S. Army, the late secretary and naturalist of the U. S. Survey, is evidently very familiar with the region traversed by Lieut. Pike, for no one could describe with such particularity all the localities, either upon the Mississippi, Missouri or Colorado Rivers, without having seen them himself. This is very evident to such readers as dwell in the Mississippi Valley, and who have been familiar with the changes which have occurred; for the notes bring out distinctly a picture of the early trading stations and white settlements, interspersed with Indian villages, more clearly than the original narrative, and give in detail the history of every locality. A good illustration of this is the note on Carver's Cave, which extends through four pages of fine print and describes all the visits real and pretended to the cave, and the serpent on the roof, which was the totem of one of the Sioux chiefs of the Cave region. It even speaks of the shaving off of the cave by the railroad grading along the bank and under the bluff. The great merit in Mr. Coues' notes is that they preserve the history of the localities, and give credit to all the local historians and archæologists. Mr. Coues seems to have read all of the local histories and records, whether contained in books, pamphlets, or even newspapers, and has given the references with great painstaking. In fact, the notes are equivalent to a bibliography

on the subject. It is fortunate that the author is so zealous an antiquarian, and so careful a bibliographer; for by these means many sketches of the early settlements, such as Prairie du Chien, Dubuque, Cassville, St. Paul, St. Louis have been repeated; and even paintings of the early forts and other prominent objects in the landscape have been preserved.

The second part treats of the expedition into Colorado, New Mexico and the capturing of the party by the Spaniards. It appears that Gen. Pike did not reach the peak which bears his name. He merely saw it from a distance and described it, but did not ascend it. The peak bore various names for a time, but the euphony and alliteration of the name caused it to come into general use. This was about the time of the gold excitement in 1849. It is now common for tourists to ascend the peak, its distance from civilization does not seem so great.

The three volumes are attended with an extensive index, which should have been properly placed in the second volume. The work is a standard one and reflects great credit on the author and on the publisher.

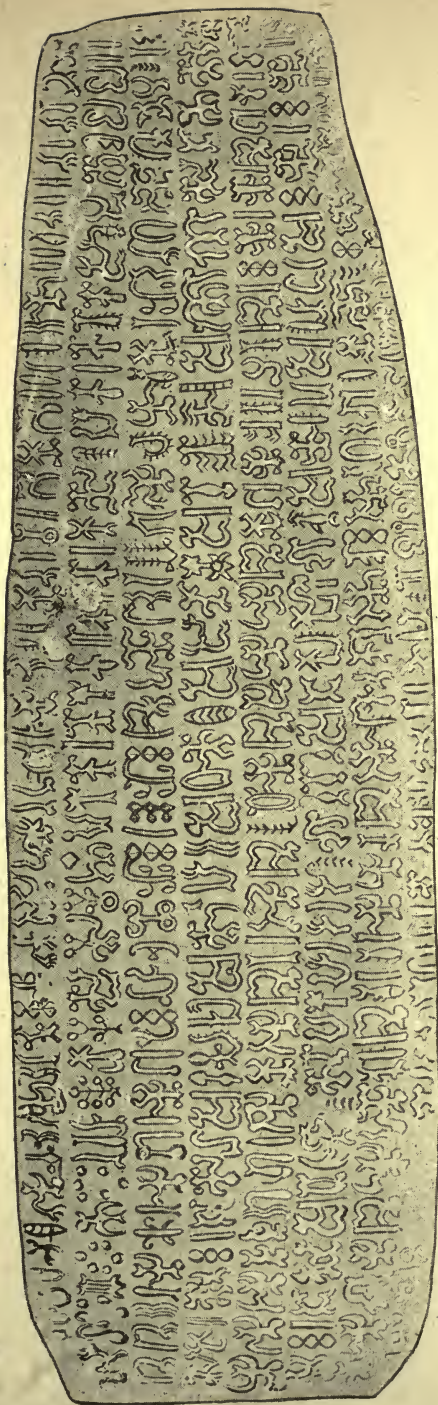


PUBLICATIONS OF THE FIELD COLUMBIAN MUSEUM.

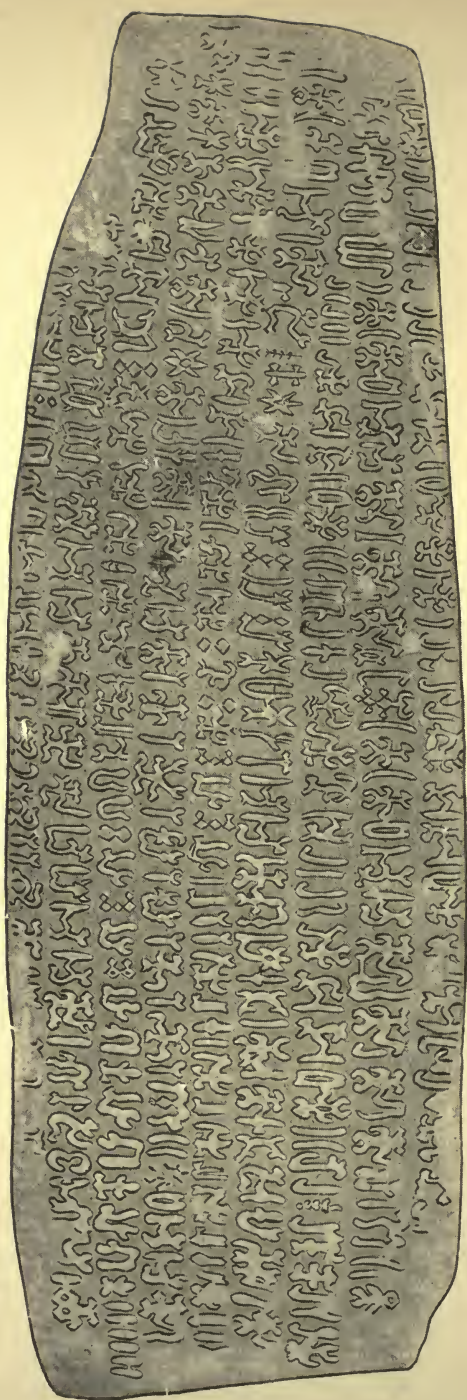
The Field Columbian Museum, founded at the close of the World's Fair in 1893, and located at the Fine Arts building, Jackson Park, has organized seven departments, which cover the whole range of exhibits. The Museum force consists at present of a Director, nine Curators, three Assistant Curators, a Taxidermist and several assistants. The work of arranging, recording and labeling the very extensive collections is well advanced, and attention is now being turned toward field work and research. There are eight parties in the field—two in Asia, two in Africa, one in South America and three in North America.

Later additions to the Anthropologic Department comprise extensive collections from Egypt and southern Europe. An expedition has just returned from Alaska, with important collections of Eskimo material; and archaeological materials have been added from several of the States and from Spanish-America.

Nine publications have been sent out and others are in preparation. It has been arranged that each department shall have its own series of volumes, to be paged and bound independently of the others. This makes distribution convenient and puts the various series within the reach of those who have most need of them.



PICTURE WRITING IN EASTER ISLAND



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No. 2.

THE PURPOSES OF ETHNO-BOTANY.*

BY PROF. J. W. HARSHBERGER.

To the World's Fair, in 1893, was brought a unique collection of objects, obtained through the liberality of Mr. Hazzard, by the Wetherill Brothers, in the Mancos Cañon, Colorado. Never before in the history of American archæology had such a complete series of objects been brought together for study and comparison. The University of Pennsylvania was fortunate in securing, through the efforts of Mr. Culin, the loan of the entire collection, which stands unrivalled in showing a large series of interesting things; plant products, in the form of food, dress and household utensils, being very largely represented. It is to the description of the plants and plant products that this article is directed.

Before describing, however, the objects which have been manufactured from plants, it is expedient to make a few preliminary observations on the importance of Ethno-Botany in general.

1. The study of Ethno-Botany aids in elucidating the cultural position of the tribes who used the plants for food, shelter or clothing. The well known classification of men into savage, pastoral, agricultural and civilized, will roughly serve our purpose. The term pastoral could hardly be applied to the tribes of North America. They were a roving people, traveling from place to place in search of game, and settling only long enough to plant a little corn, beans and pumpkins, to break the monotony of a too animal diet. Where they did not pursue agriculture, they subsisted on the seeds of wild grasses and herbs. The cliff-dwelling peoples, probably driven to the mountain fastnesses, had practically left the hunter stage, and had begun to enter the agricultural stage.

A people may be said to have left the pastoral and entered upon the agricultural stage when chief dependence is placed upon the returns of the soil under cultivation. With the

*A lecture delivered before the University Archæological Association, Dec. 4, 1895.

entrance upon this condition, new implements were devised, new methods of field labor introduced. An examination of the objects in the Hazzard Collection clearly shows that they accomplished much by the use of very simple implements. The corn was planted by a pointed stick, and hoed by a stick broadly flattened at one end. An examination of other manufactured articles of vegetal origin shows that these people were extremely provident, nothing was allowed to go to waste. It was too difficult a thing to carry the objects from below up the face of the cliff to their dwellings above, and they, therefore, exercised great care in putting everything to use. If it no longer served one purpose it was devoted to another. Mr. Cushing has shown that this care was due to certain superstitions which they held concerning the soul of objects, animate and inanimate. For example: when the hollowed-out pumpkin no longer served the purpose of a jar, it was broken into pieces, and the charred fragments served as a scraping instrument. The worn-out fibres of yucca were also conserved and put to some useful end.

This careful husbanding of their resources may be directly traceable to two causes: first, it was difficult to carry large and bulky articles from the level of the cañon to the rocky shelves above: for, in many cases, steps had to be cut in the perpendicular face of the rock, climbing being facilitated by wooden climbing crooks, which afterwards were used by their descendants, the Pueblos, ceremonially; second, they lived in an arid region, where the material ready at hand for the various uses of domestic life were extremely limited, and where the vegetal food supply was limited by the water supply, which, in many seasons, was very small. The panniers and baskets, made of cane grass, with carrying frame attached, were very serviceable in transporting seeds and fruits from the campestrine levels to the cliffs above. The ladder in the collection, the rungs of which are bound to the uprights by yucca fibre, fulfilled essentially the same purpose. An examination of the collection also shows that they had advanced to the use of a double lever of the second class, for we find them employing a pair of cedar forceps, which, Mr. Cushing says, were used to pick cacti too prickly to be gathered in the ordinary way. In fact, a large number of the objects, as manufactured from plants, shows that they had made considerable progress in the arts, and were less dependent, therefore, on the uncertain supply of food as afforded by following hunting or fishing. In other words, they were, to a certain extent, independent of their surroundings, and could, by planting crops, which they afterwards harvested and stored in granaries, eke out a precarious existence.

2. An Ethno-Botanical study throws light upon the past distribution of plants. I have at some length shown* that a

*Maize: A Botanical and Economic Study. Contrib. Botan. Laboratory. Univ. of Pa., Vol. 1, No. 2.

study of the native uses of maize, etc., leads to the belief that Indian corn was a native of Southern Central Mexico, and from there, by trade and barter, was carried to the farthest points in North and South America. Another example is found in tobacco, which was universally distributed throughout the American continents. The distribution of tobacco, however, is complicated by there being two or three species, which were used in different parts of the western hemisphere. One species (*Nicotiana rustica*) was cultivated by the Indians in New Mexico and Arizona, as observed by Dr. Edw. Palmer; another species (*Nicotiana quadrivalvis*) was cultivated by the Indians from Missouri to Oregon. One or two species are recorded as having been cultivated in California.*

“Eine Kalebasse füllten die Indianer mit einem Kräuterpulver, das sie Cohobba oder Guioja nannten. In die Kalebasse steckten sie einfache oder gabelförmige Röhren, sodass eine oder beide Oeffnungen in die Nasenlöcher passten; denn die Insulaner rauchten ihren Tabak durch die Nase.”†

The use of cedar was considerable. Cedar was used to make cactus pickers; cedar bark was twisted into headbands, woven into mats, and used in the broken-up form as tinder. We find that it was used also, in the eastern states, for in a collection of objects in the University Museum, taken from the Ohio mounds, is a piece of a well preserved log, although buried for hundreds of years. A microscopic examination shows the several cell wall layers still intact, and the woody elements excellently preserved. These examples, with numerous others that might be taken from European archæology, for instance, the existence of a peculiar variety of barley in the lake dwellings of Switzerland, prove that this study of plants is of importance, as deciding upon the original home and past distribution.

3. An Ethno-Botanical study helps us to decide as to the ancient trade routes. I have shown that maize was introduced into the West Indies by the tribes which had emigrated from the South American continent; that North America derived the cereal from the tribes living adjacent to the Rio Grande and tributaries. Considerable difficulty, however, is experienced in the study of a single isolated plant, for the trade routes may have been various, but when we introduce as evidence two, or, at least, half a dozen plants, the main trade routes can be determined with greater accuracy. There cannot be any doubt that such trade routes existed. My grandfather used to narrate stories of the Indians that passed his father's house in Central Pennsylvania on their way to the Salt Licks of Virginia. I remember seeing the trail that led southward through his woodland, as used by Chief Logan and his band of hunters.

*Rep. U. S. Dept. Agr. 1886, p. 76. Hernandez de Oviedo, in his “Historia General de las Indias,” 1535, describes the use of the plant in St. Domingo.

†1866. A. B. REICHENBACH, *Die Pflanzen im Dienste der Menschheit. I Der Tabak.* p. 2.

The discovery by Dr. Amos Brown of catlinite in the Hazzard Collection, also shows that the Indians of the S. W. United States had intercourse with the tribes residing in what is now the State of Minnesota. Mr. Joly says, with relation to European archæology : "How far the commercial relations of the primitive people of Europe extended, and what routes they followed, is a question the solution of which, like that of so many others, is as yet merely guessed at. However, the presence of amber from the Baltic, and of white Mediterranean coral in Switzerland, Italy and elsewhere ; of carved flints in abundance in the Isle of Elbe, where this rock does not exist in the natural state ; arrows made of the black obsidian of Sardinia, found in the same island and in that of Pianosa ; the jade axes found at Pauillac, in the Department of Gers ; those of augite of Auvergne found in Brittany ; the green turquoise of Brittany discovered in several dolmens in the South of France ; all of these articles, of which the rough material is foreign to the country where they are found, prove that from the earliest ages more or less commercial relations existed among the most ancient inhabitants of Europe." The same principles apply to the discovery of plant products in various parts of the globe. Commerce very early carried yew wood from the Rhine country to the Baltic, where the tree was scarce, and thence to the Esths and Wends, where the yew was not found.

The first step in deciding upon the ancient trade routes is to ascertain (1) what plants were used by the cliff-dwelling Indians, for example, of the Mancos cañon in Colorado ; (2), to systematically tabulate the distant and local plants, and (3), to discover, if possible, the home of the non-indigenous plants. When all of these points are decided upon, we shall have sufficient data with which to map out the Indian trade routes.

There are several ways by which the plants as used by the cliff-dwellers can be determined. (A.) By a direct botanical determination of the species of plant used. This is possible in many cases, when we have seeds, nuts, tubers, bulbs and berries used as food ; also, by a botanical analysis of the pot-herbs which may have the leaves and flowers preserved. An examination of the human excrement might disclose, by means of the undigested voided seeds, the plants that were used as food. In dealing, however, with the raw materials of manufacture, it is often very difficult to determine from what vegetal source they were derived. (B.) A microscopic examination of the plant product will reveal, for example, if it be a piece of wood, its woody character. We could determine by such an examination whether the stem was that of a Dicotyledon Angiosperm or that of a Dicotyledon Gymnosperm. We will, for sake of argument, imagine that the piece of wood shows a gymnospermic structure. The question now is: Can we distinguish a piece of yew wood from that of the pine, the fir, the larch and the juniper ? The following table will show that such a distinction can be made :*

- I. Tracheids with loosely wound spiral bands.
YEW, *Taxus baccata*.
- II. Tracheids without loosely wound spiral bands.
 1. Resin ducts in the wood and the larger medullary rays.
(A). The inner protoplasmic medullary ray cells towards the tracheids with a single large pit ; the tracheidal medullary ray cells of the circumference with strongly bent scalloped edges.
PINE, *Pinus Sylvestris*.
(B). The inner protoplasmic medullary ray cells communicating with the tracheids by many small pits ; the tracheidal medullary ray cells of the margin less regularly formed ; in many rays interrupted or deficient.
(a). The tracheidal medullary ray cells with small teeth. Groups of stone cells, in the secondary bast.
NORWAY SPRUCE, *Abies excelsa*.
(b). The tracheidal ray cells wholly with smooth walls, and isolated bast fibres in the secondary bast.
LARCH, *Larix europæa*.
 2. Without resin ducts in the wood and medullary rays.
(A). Without starch or resin-filled woody parenchyma. The tracheids 0.030 mm., broad.
SILVER FIR, *Abies pectinata*.
(B). With starch or resin filled parenchyma cells, which in longitudinal section appear as simple cell fibres, the tracheids 0.018 mm. across in the secondary bast, regularly thickened tangential bands of bast fibres and thin-walled elements.
JUNIPER, *Juniperus communis*.

A microscopic examination of a dicotyledonous stem would also help us in identifying the wood.

We have a piece of wood before us which we must cut in order to determine its microscopic appearance. A striking feature in such a section is the concentric circle of ducts in the early spring growth of wood ; in the thick rings sometimes there are two or three rows of ducts, the third one being of smaller size than the others. "The first row forms in the spring, as the leaves are opening." The largest duct is usually round, and 0.13 of an inch in diameter ; some are smaller, and others flattened or elliptical. Except when first formed, these ducts are never open, as usually stated, but are filled with delicate tyloses. Surrounding these ducts are small cells, which are termed tracheids, having minute thin places in their sides ; the middle lamella of the cell, however, being not visibly perforated. Some cells containing starch are also intermingled

with these tracheids. In an annual layer of vigorous growth, large bundles or masses of hard, dense fibres are seen just outside of the concentric circles of ducts, and when fully formed, extend through the outer part of the layer. These fibres vary in diameter from .006 to .0075 of an inch. The medullary rays run through the bundles, and at frequent intervals are intersected by cells running parallel to the axis of the tree, thus dividing a mass of hard fibres into small rectangles. Such a detailed description coincides with the structure of the white oak, and after applying the following further tests, we are assured that the wood is from one of the most valuable of our forest trees (1887, Forestry Division, Bul. 1, p. 40). If the study of the microscopic structure led to no definite conclusion as to the nature of the wood, then we should have recourse to other methods. (1.) The specific gravity of the specimen might be calculated by the following rule: Divide the weight of the body in air by the loss of its weight in water; the quotient will be the required specific gravity.

Let P = weight of the wood in air.

P^1 = " " " " in water.

D = specific gravity.

$P - P^1$ = weight of water displaced.

$$\text{then } D = \frac{P}{P - P^1}.$$

If the wood is lighter than water, another equation must be used. "Weigh the body in air. Then, to make it sink in water, attach to it a heavy body whose weight in water is known, and find the weight of the two bodies when submerged in ice-water. Let w equal the weight of the given substance in air, a and b that of the sinker in air and in water respectively, and w^1 that of the substance and sinker in water. Then $w + a$ equals weight of both in air, $w + a - w^1$ that of the water displaced, and hence $a - b$ the volume of the sinker. Therefore, $w + a - w^1 - (a - b) = w - w^1 + b$ = the volume of the substance, and

$$D = \frac{w}{w - w^1 + b}.$$

A piece of wood tested in this way showed a sp. gr. of 0.4504. Upon comparing this figure with that of the tables in Sargent's voluminous work on the North American forest trees, we find the number to correspond with that set down for chestnut wood. (2.) An ash determination is also a means of discovering the species of tree from which the wood was taken. (3.) The weight of the wood per cubic foot in pounds and its fuel value, are also means of deciding as to the kind of tree used.

We have now seven important facts concerning our piece of wood:

1. Its geographic habitat.
2. Its specific gravity.
3. Its microscopic structure.
4. Its fuel value.

5. Its resistance to transverse strain and compression.
6. Its weight in pounds per cubic foot.
7. Its ash.

We can judge as to the past meteorologic conditions by an examination of the annual rings of wood, but the difficulty is to determine, in the case of such woods as are to be found in the Hazzard Collection, the year in which the wood was collected, whether at once or after the piece had lain on the ground for some time. We have, however, in the wood a valuable indication as to the years of drouth and excesses of rainfall. A recent writer in *Forest Leaves* (v. 51) describes the irregularity of growth very forcibly, and gives tables supporting his statements. He says: "Having observed, in cutting various timber trees, the irregularity of growth at different periods of tree life, and being interested in the striking coincidence of these irregularities with the occurrence of certain forest fires, an examination was made. On counting back the rings to where these irregularities occur, it was found that these checks, scars, and decreased growth of rings denoted an interference with the regular healthy life of the tree, the result of forest fires occurring at these periods."

Having determined the wood as used by the Indians, the next thing is to determine whether the plant is indigenous or introduced into the locality. The place from which it came can, in most cases, be definitely located by botanical explorations.

4. Ethno-Botany is useful as suggesting new lines of manufacture at the present day. This is especially true of woven stuffs. Mr. F. H. Cushing has shown that by unraveling the woven fabrics a clew can be obtained as to the manner of weaving. He has succeeded skillfully in imitating a large number of Indian stitches, and has discovered many interesting and suggestive facts in connection with the early weavers' art.

The especial province of Ethno-Botany is to study, microscopically, the nature of the fibre employed, as, in many cases, new methods of obtaining raw materials from materials might be suggested. Not that we have not improved on the methods of our ancestors, but the sedentary Indians of the arid districts of our country were extremely ingenious, and put to the best use all the plants round about them. Again, we may learn by this study new uses of plants of which we were in ignorance. A stimulant and nerve tonic, new to materia medica, has been discovered in this way. Dr. D. Webster Prentiss discovered the action of the drug. The drug is popularly known as "Mescal Button," and is yielded by a plant, *Anhalonium Lewinii*. He obtained his supplies through Agent James Mooney, of the U. S. Bureau of Ethnology, who resided among the Indians of the Northwest, especially the Kioways, for many years. It is to the use of the mescal button by the Kioways in their religious ceremonies that the white man owes his present knowledge of the drug. The Indians assemble in their council

tents, usually on Saturday night, and seat themselves, each with his supply of buttons, about a large camp fire, which is kept burning brightly. Button after button is swallowed, from sundown until 3 o'clock A. M. Throughout the ceremony there is no dancing or singing, but a continual monotonous beating upon drums is kept up by the attendants. The Indians sit in a blissful reverie for hours enjoying the beautiful visions of color and other manifestations caused by the resulting intoxication. In fact, most of the plants which the new world afforded were made known in this way—tobacco, chocolate, the potato, maize, and tomato were first used by the Indians of North and South America, and afterwards borrowed by white men.

One of the principal features of the equipment of every ethnological museum where ethno-botany is to be studied, should be a collection of seeds, kept in glass bottles and systematically arranged. The identification of all kinds of seeds, collected from many sources, is impossible without such a collection.

"The seed collection of the Division of Botany, U. S. Dept. Agr., is put up in glass specimen tubes, without necks, and of two sizes—one, 5 c.m. long and 1.5 c.m. in diameter; the other, 10 c.m. long by 3 c.m. In addition to the seeds, one or two capsules of the dry fruits are inclosed whenever possible. Fleshy fruits of our native wild plants are kept in a preservative fluid of some kind. Seedlings of economic plants, in various stages of germination, are also kept in alcohol for reference and study. The bottles are placed in cloth-covered trays, made of heavy binder's board. The trays for the smaller bottles hold 100 specimens. These are placed in one case, which is to contain, also, so far as possible, herbarium specimens of the plants from which the seeds were taken. A card index to the collection is of great assistance in finding specimens."*

The equipment would not be complete without a series of microscopic slides, prepared to show longitudinal, transverse and tangential sections of all our native woods. These should be indexed and catalogued in such a way as to be easily available for comparative use.

Lastly, an Ethno-Botanical garden should surround the museum building, to provide living plants for study in connection with the objects of vegetal origin displayed in the museum.†

"Only aboriginal American plants should find a place in such a garden. No plant can be found more graceful than maize, a grass associated with the myth of the aboriginal races of America and worthy the place as our national emblem.

*1894, Year Book of Department of Agriculture, p. 408.

†1895, Harshberger, *Museum and Garden*. *Philadelphia Evening Telegraph*, Oct. 26, 1895, p. 5.

This plant has been little thought of for decorative purposes in our gardens. Yet it is decidedly ornamental and worthy of esteem. The sunflower, too, ought to be grown. The Indians recognized its value, for the Moquis and Supais planted it for food, and used the ground seed, mixed with cornmeal, as a dainty. The tobacco plant should not be forgotten, as it is decidedly ornamental.

"The tomato, with its crimson fruit, the pumpkin vine, the bean and potato should find a place in some corner of this aboriginal American garden. The oak, yielding acorns, the willow, dye stuffs, can be planted with good effect, while a pond, in which grow (*Sagittaria variabilis*) yellow lotus (*Nelumbium luteum*), both furnishing aboriginal food esculents, watercress, a salad plant, and wild rice (*Zizania aquatica*), would serve to break the rigid outlines of the formal beds.

"The plants should be arranged with reference to the Indian tribes which cultivated them. The plants of the Algonquin should stand apart from those of the Iroquois; those of the Aztecs from those of the Pueblos. Such a geographic arrangement is most desirable for educational purposes.

"An arrangement according to the uses of the plants ought also be made. The strictly agricultural plants — such as corn, beans, pumpkins, etc., ought to be sown in one bed; the fibre plants, like basswood (*Tilia Americana*), sumac (*Rhus aromatica*), willow (*Salix lasiandra*), unicorn plant (*Martynia proboscidea*), yucca (*Yucca brevifolia*) in another; the dye plants, as alder (*Alnus incana*), celandine, smartweed, poke, white maple, and gold thread (*Coptis*) in still another.

"The myth plants and medicine plants are important, also, as showing the culture of the aborigines. They, by no means, should be excluded from this garden.

"There can be no doubt, therefore, that such ethno-botanic gardens would stimulate greatly the interest in Indian plants, and, at the same time, they would be of the greatest scientific value. Nothing of the kind has ever been tried along the lines suggested, and such a garden would soon become a Mecca for those who desire to write upon our American plants and their uses among the aborigines."

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CAVE EXPLORATION IN THE EASTERN UNITED STATES IN 1894.

BY HENRY C. MERCER.

Evidence, till recently unlooked for, has been examined in the Eastern United States to show how and when man first reached the Atlantic seaboard ; whether he had come there in geologically remote times, or whether, having crossed the Mountains, as the Lenape alleges, about 1370, he had found a region hitherto untrodden by human feet.

Granted that in America, as in Europe, early man visited or dwelt in all large, well-lit and easily accessible caves, then it seems that if many races and epochs of culture have succeeded each other in the New World as in the Old, American caves, rather than surface sites of habitation, should somewhere prove the fact ; for there, where rock walls and the limit of light and shelter would have forced every pre-historic cook to build fires and gnaw and throw bones on the same spot, epoch-denoting refuse layers would have been made, the oldest on the bottom and the latest on the top. If further, in the search for such caves in America, we may infer that those will tell the most which have longest confronted the greatest number of primitive inhabitants, then it seems that *those besetting the mountain passes and river pathways by which early man must have first penetrated the great forest and crossed the Appalachians, during the time that the Continental topography was as it now is, would likeliest contain the fullest record of his presence.*

To realize this is to regard, as of superior import, the rock habitations and shelters opening upon the mid-continental water-way of the Tennessee or that of the Ohio, which, with its eastermost reaching tributary, the Kanawha-New River, would lead a foot-wanderer, the first comer, let us suppose, at least pains, from the Mississippi River over the mountains to the Eastern Coast. Many interior-lying shelters, it seems, might be eliminated from the search for the sake of a first look at caves like these, which bordering so presumably ancient a foot-path, might likeliest have caught presence tokens from every race that passed that way. More than this, a long series of them by the river might well show the direction of migration by the increased number of layers, or the greater fossil age of the man-gnawed bones as we proceeded up or down stream.

That we were on a mountain pass of archæological significance was soon apparent, as we descended the rock-beset channel of the New River-Kanawha. The riverside village sites (examined at Ivanhoe and Flanagan's) often contained

mica, as we learned at Indian Creek, Cotton Hill and Summer's Creek, and the mounds, midway in the mountains, at Dunkard's Bottom, Little River, Madam Creek, Sandstone and Gauley, in the two instances examined, enclosing mica discs (at Dunkard's Bottom with an arrow-head cache, and at Hinton with a skeleton), were, beyond all doubt, the work of the builders of the Ohio Tumuli, who had crossed and re-crossed the mountains that way to get mica in North Carolina.

Leaving behind the Forge Cave (described in the *American Naturalist* for July, 1894.), with its single geologically modern Indian layer, and searching every rock fissure on the stream, "Thompson's Shelter," under Castle Rock, (26 feet above water, left bank of New River, $\frac{1}{4}$ mile above Pembroke Ferry, Giles County, Virginia,) close edging the narrow and level path of the river migrant, with mounds and Indian traces above and below it, and 35 miles from Stewart's Cave, Greenbriar County, West Virginia, where Jefferson discovered the Fossil Sloth, seemed the chosen receptacle for all the proof we sought. But our trench (10 feet 7 inches long by 19 feet 3 inches wide by 12 feet 8 inches deep), dug to rock bottom through (a) six inches of cave earth, with charcoal, arrow-heads and glass (white man and Indian), and (b) eight feet two inches of hearths and ash-beds, with bones, pottery and flint chips (Indian), showed no man-associated animal more ancient than Black Bear, Wolf, Grey Fox, Deer, Raccoon, Woodchuck, Squirrel, Rabbit, Cave Rat, Wild Turkey (numerous). Duck, Land Tortoise, Snapping Turtle, Catfish (frequent), Snake, Unio (three species), and Triodopsis. The bones grew scarce and the pottery ceased as we dug below the fifth foot, but the intermixed sand showed that the river had been in the cave, and though there were isolated masses of charcoal eight feet eight inches down, there was no sharp line of distinction between them and the hearths above, or proof, in the absence of presumably older bones, that this lower refuse, occurring in the now purer sand, denoted an epoch geologically more ancient.

Examination of many river-fronting cliffs brought us at length to the imposing sandstone rock shelter, known as the Buffalo House, 50 miles down stream (right bank of New River, Summers County, West Virginia, at mouth of Laurel Creek, 23 feet above it and 405 feet from the river, with two mounds $\frac{1}{4}$ mile from its entrance). There the evidence at Thompson's was repeated in a trench 8 feet wide, 20 feet long and 11 feet deep, dug down to formidable masses of fallen sandstone. It showed (a, 1 foot) dust, bones, Indian remains, nails and glass (white man and Indian), and (b, 5 feet) a series of hearths, mixed with bones, pottery, arrow-heads and chert chips (Indian), resting on a substratum of roof splinters, through which charcoal had trickled to a depth of 11 feet, and containing the remains (kindly identified with all the other bones and shells by Prof. Cope) of the Bear, Panther, Deer

(very common), Squirrel, Rabbit or Rodent, Land Tortoise, Turkey, Bird (undetermined), Snail, Unio (two species), Periwinkle and Walnut. Again we had missed all trace of an earlier age of man-devoured animals, while the human relics were those of the pottery-making Indian of the Forge Cave, of the builder of Flanagan's midden heap and, it seemed, of the mica miner of Hinton's Mound, 10 miles up stream.

Below the Buffalo House, mounds on distant hills still followed the river's course, but the valley narrowed into an impassable gorge, which still traceable Indian trails had avoided by a long detour, and where for 50 miles a man could not have walked along the stream. This change in the valley weakened the force of deductions from our excavations, for important as the Trans-Appalachian pathway still seemed, trodden, as it had been, by the marauding Indian and the mica-hunting builder of mounds, the first comer, older possibly than either, confronted by this obstacle of the gorge, might have turned back and crossed the mountains another way. The Mule Pen sandstone shelter, fronting this forbidding chasm (left bank of Kanawha, 63 feet above the river, $\frac{1}{2}$ mile below Kanawha Falls), did not surprise us with the scantiness of its human remains. There our trench, 8 feet broad, 10 feet long and 5 feet deep, into undisturbed yellow clay, mixed with pebbles and coal, showed (*a*, 1 foot) glass, nails, arrow-heads, chips and pottery (white man and Indian), and (*b*, 1 foot) charcoal, pottery and arrow-heads (Indian), containing the sparse remains of deer and the shells of two species of Unio.

Once past the Kanawha Gorge, the midden and mound-marked shores of the broadening valley betokened that the tide of early habitation had returned to the river, and we saw the pleasing lawns by which a man might walk unhindered from Charleston, West Virginia, to the Mississippi, but the absence of caves in the low sandstone bluffs, where many ravines were faithfully explored, deprived us of that record which would have availed more there than anywhere else. A surface refuse heap, examined at Macker's Station (right bank of Ohio River, 6 miles above the Kanawha's mouth), containing the bones of Man, Bear, Grey Fox, Dog, Elk, Calf, Opossum, Raccoon, Turkey, Soft-Shell'd Turtle and Unio (seven species), might or might not have been left by the builders of the neighboring earthworks at Marietta, Grave Creek and Charleston, and its still existing fauna added nothing to the evidence of an ancient occupancy.

Henceforth, for 200 miles, the wooded sandstone ridges edging the Ohio lacked the cave evidence we wanted. In vain we halted for information by the gentle slopes, in vain examined many ravine-hidden shelters dampened by cataracts, until the Falls of the Ohio, at Louisville, were passed. There, again, entering a limestone region, we reached the conspicuous, but scarcely accessible, Boon's Cave (right bank of Ohio, 3 miles above Brandenburg, Harrison County, Indiana). But its

single surface film of Indian refuse proved little, and we went on chagrined to find that the limestone river caves, opened from well-like sinks, and were damp, dark and unfit for human habitation. After penetrating an Indian layer, containing Deer, Raccoon, Rabbit, Rodent, Turkey, Land Tortoise, Fresh Water Drumfish, Catfish, Snail (*Mesodon* and *Anguis-pina*) at Alton Rockhouse, (right bank of Ohio, 1 mile below the mouth of Little Blue River, Crawford County, Indiana), our work was interrupted by the owner, and leaving with disappointment the broken record, we turned down the river, to reach at last the once celebrated robber's haunt, well known to flatboat men and pilots as Cave-in-Rock (right bank of Ohio River, 30 miles below Shawneetown, Hardin County, Illinois). But at this most conspicuous shelter on the Ohio river freshets had washed out our evidence, leaving upon the cave floor the mixed remains of an Indian stone box, graveyard and midden heap, which had fallen in through a sink-hole from the hill above. Meanwhile, our examination of the twenty-three-miles-long Wyandotte Cave, Crawford County, Indiana, proved that Indians had carried carbonate of lime from the "Alabaster" quarry, observed by Mr. Collet, to the torch-room, nearly two miles away, underground, and that to light their work at a Jasper mine, discovered by Mr. Hovey in the "Pillared Palace," they had used torches, as proved by my experiment, of hickory bark.

These were new facts for Archæology, as was the discovery of another source for the nodular flint blades of Ohio mounds, at a worked deposit of the native rock (2 miles south-west of Brandenburg, Meade Co., Ky.), and the study of cave burial at Peckenpaugh's Cave, where human bones, along with Charcoal and remains of Deer, Rodent and *Unio* scattered the surface of a small underground chamber, only accessible by rope from above. But as these caves were out of the river-way and unsuited for habitation, their study, however instructive, added nothing to the main object of search, and left us with the Lake and Morgan Rock shelters (left bank of Ohio, under Jeffrey's Rock, 3 miles from the river and 4 miles above Hawesville, Hancock County, Kentucky) as our last available test for the antiquity of man on the Lower Ohio. At Lake's Cave our trench, 14 feet long by 10 feet wide by 2 feet 7 inches to 5 feet 6 inches deep, reaching bands of pure stratified sand and clay, with water at 5 feet, revealed no great antiquity for the midden deposit (containing the remains of Man, Wolf or Dog, Ground Hog, Rodent, Raccoon, Deer, Turkey, Land Tortoise and *Unio*), where the cave occupants had buried two dolicocephalic skeletons, with decayed teeth and jaws perforated by abscesses, in crouching positions against the inner wall. At Morgan's Cave the single Indian layer on a projecting ledge, with its remains of Raccoon, Deer, Rabbit, Turkey, Bat, Bird, Lizard, *Unio* (two species), Honey Locust, Butter Nut, Pig Nut, Acorn, Hickory Nut, Corn Cob and Chestnut Burr indicated

no great antiquity, and proved no predecessor for the cave inhabitant of the surface. Still, these latter shelters, though of grand dimensions, were obscured by trees, and removed as they were from the river, could not, with their doubtful water supply, be regarded as final evidence against the existence of a geologically ancient people on the final westernmost reach of the great water path.

Thus ended, our expedition of 600 miles down an important route of ancient North American travel, by way of the once chilly haunts of alleged Paleolithic Men in Ohio and Indiana, and through the preferred territory of the "Mound Builder," had failed to find cave-buried traces of any pre-Indian wanderer. But, striking as this fact was when all is summed up, it was not so striking as the absence in our cave-cut trenches of underplaced remains of the older animal inhabitants of the region. The Fossil Sloth, the Mastodon, the Giant Chinchilla, the Horse, the Reindeer had been thereabouts before the epoch of the midden-heap fauna unearthed. But where were they? Had they never come into the caves to die? Had carnivora never dragged thither their carcasses, or had freshets washed away their once deposited bones? To account for the absence of such fossils was not easy as we dug downwards, unless we supposed, which was possible, that the man-selected shelters examined by us were too open and too light to serve, like the "bone hole", at Port Kennedy, and Hartman's Cave in Pennsylvania, as the chosen dens or tombs of animals.

Grateful acknowledgement is here returned to Mr. C. Howard Colket, Mr. Charles C. Harrison, Dr. Daniel G. Brinton, Mr. Stewart Wood, Mr. Charlemagne Tower, Jr., Dr. Horace Jayne and Mr. Edwin Balch, whose generous contributions have rendered possible the expedition. As before, all the animal and vegetable remains have been identified by Prof. Edward D. Cope, to whose kind coöperation and assistance I owe continued thanks.

ALDIE, DOYLESTOWN, JULY 4, 1894.

MEDIÆVAL "GLAMOUR" AND ITS ANTIDOTES.*

BY MR. DAVID MACRITCHIE.

In one of his "Letters on Demonology and Witchcraft",¹ Sir Walter Scott tells us that the matrons of ancient Scandinavia "possessed a high reputation for magic, for prophetic powers, for creating illusions, and, if not capable of transformations of the human body, they were at least able to impose such fascination on the sight of their enemies as to conceal, for a period, the objects of which they were in search." * * * * "This species of witchcraft," he adds, "is well known in Scotland as the *glamour* or *deceptio virus*, and was supposed to be a special attribute of the race of the Gipsies." And in another place² he remarks as follows: "Besides the prophetic powers ascribed to the Gipsies in most European countries, the Scottish peasants believe them possessed of the power of throwing upon bystanders a spell, to fascinate their eyes and cause them to see the thing that is not." Thus, in the old ballad of "Johnnie Faa," the elopement of the Countess of Cassillis with a Gipsy leader is imputed to fascination:

"As sune as they saw her weel faur'd face,
They cast the *glamour* o'er her."

Scott refers to this subject over and over again. In his "Lay of the Last Minstrel" he tells us that by the power of glamour one could make —

"The cobwebs on a dungeon wall
Seem tapestry in lordly hall;
A nut-shell seem a gilded barge,
A sheeling seem a palace large;
And youth seem age and age seem youth —
All was delusion, nought was truth."

And in his appended "Notes" he turns again to this theme: "Glamour," he repeats,³ "in the legends of Scottish superstition, means the magic power of imposing on the eyesight of the spectators, so that the appearance of an object shall be totally different from the reality." * * * "It was formerly used even in war," he states, adducing an instance of the year 1381, in which a certain "necromancer" employed this art during the siege of a castle on the coast of Naples. Nor does he confine the knowledge of glamour to Gypsies, necromancers and the

*Read at a meeting of the International Folk-Lore Association, in Memphis, Tenn., Jan. 23d, 1895.

1 (Letter III, pp. 99-100, of edition of 1830.)

2 (Minstrelsy of the Scottish Border: "Christie's Will," Note B.)

3 (Appendix to "The Lay of the Last Minstrel," Note 2 M.)

witches of Scandinavia. Saxo Grammaticus mentions a particular sect of Mathematicians, as he is pleased to call them, who —

“Per summam ludificandorum oculorum peritiam, proprios alienosque vultus, variis rerum imaginibus, adumbrare callebant; illicibusque formis veros obscurare conspectus.”

“Merlin, the son of Ambrose, was particularly skilled in this art, and displays it often in the old metrical romance of Arthour and Merlin. * * * * The Jongleurs were also great professors of this mystery, which has, in some degree, descended with their name on the modern jugglers.” But he proceeds to observe that “our modern professors of the magic natural would have been sorely put down by the Jogulours and Euchantours of the Grete Chan,” whose feats are described in Mandeville’s *Travels* (a work drawn from fourteenth-century sources) in these terms: “They make to come in the air the sun and the moon, beseeeming to every man’s sight, and after, they make the night so dark that no man may see anything, and after, they make the day to come again, fair and pleasant, with bright sun to every man’s sight; and then, they bring in dances of the fairest damsels of the world and richest arrayed; and after, they make to come in other damsels, bringing cups of gold, full of milk of divers beasts, and give drink to lords and to ladies; and then they make knights to joust in arms full lustily, and they ride at each other at a great pace, and they encounter full fiercely, and they break their spears so rudely that the truncheons fly in splinters and pieces all about the hall; and then they make to come in hunting for the hart and the boar, with hounds running with open mouth, and many other things they do of their enchantments that it is marvel for to see.”

Very similar to this description is the extract which Scott gives from the History of Valentine and Orson (Rouen 1631), with respect to “the prodigies exhibited by Pacolet and Adramain”: “Then Adramain raised a mantle above a pillar, in such a way that it seemed to those who were present that a very large and terrible river was flowing through the place; and in that river there seemed to be a great many fish, large and small. And when those of the palace saw such a quantity of water, they began to lift up their robes and to cry loudly, as it they feared to be drowned, and Pacolet, who saw the enchantment, began to sing, and in such a subtle fashion, that it seemed to the spectators that in the midst of the river there ran a large antlered stag, which knocked down all that came in his way; then they thought they saw an array of huntsmen pursuing the stag with many greyhounds and other dogs, whereupon several of the company rushed forward to try and capture the stag, but Pacolet caused the stag to suddenly disappear. ‘You have played well,’ said Orson, ‘and well do you know how to use your art!’”

Both of these accounts are, moreover, closely in agreement with Chaucer's description of the performances of the "Trage-toures" of the fourteenth century, as will be seen from the extracts which Scott gives from "The Franklin's Tale." And, finally, I must be allowed to quote a very interesting account of a similar scene, witnessed in China by "one Ibn Batoutah, a native of Tangiers, who was born somewhere about the year 1300, and who, with the exception of one or two western countries, visited nearly every region of the then known world." After describing a day's experience in the city of Hang-Cheu, he continues:

"The same night a juggler, a slave of the Khan's, presented himself, and the Emir said to him, 'Let us see one of your wonders.' On this the juggler produced a ball of wood, pierced with many holes, through which he passed long cords. He threw it up into the air, and it went so high that it presently was lost to sight. We were at the time in the middle of the citadel, and it was at the hottest season of the year. When only the end of the cord was left in his hand, the juggler ordered one of his pupils to catch hold of it and climb up into the air, which he did, until he disappeared from sight. The juggler called to him three times, but received no answer. Then, as if he were angry, he caught up a knife, grasped the cord, and disappeared also. Presently, he threw down on the ground, first, one of the boy's hands, then a foot, then the other hand, then the other foot, the body and the head. He descended puffing and blowing, and his clothes were spattered with blood. He kissed the ground at the Emir's feet, and said something to him in Chinese. The Emir having given him some order or other, our gentleman took up the limbs of the boy, and put them against each other in their proper place, and lo! and behold, the boy got up and stood there as if nothing had happened to him. All this astonished me so much, that I began to suffer from a palpitation of the heart, as I did at the court of the King of India, when I witnessed something analogous. They made me take some medicine, which put me right again. The Khadi Afkhar, who was sitting beside me, said: 'By God! the man has neither gone up nor come down again, nor cut up limbs. The whole affair is nothing but a piece of jugglery!'"

Now, when one reflects upon the evidence just cited, what is the deduction naturally drawn? It seems pretty clear that many of those accounts relate to nothing more marvelous than very clever scenic and theatrical displays, in some cases assisted by the use of transparencies and the "magic lantern." "Well have you played, and well you know how to employ your art," says Orson to the chief juggler at the close of the performance. In these words there is nothing but admiration and approval of the skill displayed by the performers. There

1 ("A Rival of Marco Polo." *National Review*, July, 1888, p. 609.)

is not a hint that the speaker believed he had witnessed anything supernatural. And the same thing is indicated by several other accounts. It may be that, in some cases, the narrator, who, perhaps, belonged to a less civilized nation or caste, attributed the effects produced to the working of supernatural power. But, stripped of this veil drawn by mere ignorance, many of these performers proclaim themselves as examples of mediæval sleight-of-hand and theatrical skill.

Nevertheless, a very important element still remains to be accounted for, namely, the effect caused by the exercise of "glamour" or "fascination." How prevalent the use of this power was during the Middle Ages, or how it was legislated against, is scarcely realized sufficiently at the present day. "Fascination was comprehended as a capital offence in the laws of England against sorcery," says Sir John G. Dalzell¹; while one of the chief reasons for the persecution of the Gipsies in Scotland was that they were addicted to "*charming* and other abused sciences." There can be little doubt that all these terms—"charming," "fascination" and "glamour"—are simply mediæval equivalents for our modern "mesmerism" and "hypnotism." The very words in which Sir Walter Scott defines glamour demonstrate this. "Glamour," he says, "means the magic power of imposing on the eyesight of the spectators, so that the appearance of an object shall be totally different from the reality"; "or," as he says, when speaking of the Gipsies, it was "the power of throwing upon bystanders a spell, to fascinate their eyes, and cause them to see the thing that is not." "They could do wonders by the power of the imagination, their fancy binding that of others," remarks Glauvil of the English Gipsies." If one were asked to give a concise definition of our modern mesmerism in unscientific language, one could hardly find more appropriate terms than these.

Admitting for the moment that this was indisputably the case, that mediæval "glamour," "fascination," or "enchantment" was nothing less than mesmerism, how many incidents in Folk-Lore are thereby capable of rational explanation? A belated peasant encounters a mysterious stranger in some lonely place, to whom he is induced to sell something or another, it may be a horse, in exchange for a handsome sum in gold—or what seems to be gold. But next morning, when he is no longer under the stranger's spell, the unfortunate countryman discovers that his gold coin proves to be nothing but a handful of leaves or slate stones. The whole tale may be absolutely historical. It may resolve itself simply into this: that a Gipsy—since the Gipsies were notorious for the use of this power—had fallen in with an easy victim, had mesmerised him, and had juggled everything he could out of him. It is precisely what a modern Gipsy would delight in doing; what, indeed,

1 ("Darker Superstitions," p. 25.)

some Gipsies even yet endeavor to do, in spite of the legislation of centuries.

Let me take another instance. A similar solitary wayfarer is induced to enter what he believes to be a magnificent palace, where he sees much that is rich and strange, and where he is nobly entertained. But when he comes to his senses, he finds himself lying in a damp and gloomy cave, and realizes that "all was delusion, nought was truth." What seems to me a very clear example of such an instance is also related by the Arab traveler already cited. After giving an account of a visit which he paid to a certain old Sheikh, who lived in a cave, and was understood to possess miraculous powers, he continues :

"One of the friends, to whom I spoke on the subject, told me the following story: 'I once went,' he said, 'to visit this man in the cavern, and he took me by the hand. Immediately I imagined myself to be in an immense castle, where the Sheikh was sitting on a throne. He seemed to me to be wearing a crown upon his head, and there were ranged on each side of him lovely female attendants, and fruits were incessantly dropping into conduits of water that were to be seen flowing before him. I fancied that I stooped and picked up an apple to eat, and lo! in an instant I perceived that I was in the cave, and the Sheikh was before me, laughing and making a mock of me.'"

Sir John Dalzell seems to have interpreted in this way the "fascinating illusions" of the Middle Ages. "How many deceptions of jugglers," he observes, "are calculated to delude the senses, even of those on their guard, in exhibiting the innocent 'amusements of science and the arts!'" Reginald Scot presents a delineation and description, not only of how to thrust a knife through your arme, and to cut halfe your nose asunder,' but he shows how 'to cut off one's head and to laie it in a platter' for an illusion.'"¹ Here we see that Dalzell, like his celebrated predecessor, Reginald Scot, saw nothing supernatural in such feats. They could each have echoed the exclamation of the fourteenth century Arab: "By God, the man has neither gone up nor come down again, nor cut up limbs. The whole affair is nothing but a piece of jugglery."

Dalzell again remarks that Michael Sicydibes, of old, could change the true appearance of objects."² The *true* appearance, be it observed. In stating this, he asserts once more that the effect produced was due to a certain magnetic influence exercised over the spectator, who was thereby made to see "the thing that was not."

Here, however, it is necessary to refrain from multiplying instances of a similar kind, and to turn to a very important objection that threatens the full acceptance of the identification here offered. It will be readily admitted by all, I think, that a

¹ (Dalzell's "Darker Superstitions, p. 20.)

² (*Op. cit.*, p. 19.)

powerful mesmerist, encountering a simple countryman, could induce him to accept "fairy money" as real coin, and to believe whatever he desired him to believe. But the question arises: "Could a mesmerist so influence a number of spectators without any direct and individual contact?" This is undoubtedly a serious objection, and it is one which I am not myself competent to answer. One would naturally say that personal contact was essential. Yet, if a juggler, ancient or modern, could *not* deceive a whole audience into imagining that they saw what he wished them to see, in what other way can one explain the phenomena described by the Arab traveler and by many others of recent date?

Mr. Andrew Lang, who has more than once considered the question of "glamour," has quite recently¹ made reference to Professor Stoll's new work on "Suggestions in Folk Psychology." Mr. Lang remarks thus: "The Shamans of Siberia, it seems, wash their faces in red-hot ashes, yet are not scorched or scarred. * * * * Is this playing with fire, a fact or a fancy? Professor Stoll seems to think he has solved this and many other problems by the simple use of the word 'suggestion.' * * * * Some missionary, somewhere, says that he once saw a conjurer pretending to turn into a tiger. The native spectators cried out that they beheld the development of teeth, claws, and stripes, while the missionary saw nothing unusual, only the antics of a medicine man. Here the natives (like little children in a similar case) were under the influence of 'suggestion,' while the white man retained his common sense." Referring to a kindred illustration, Mr. Lang further remarks: "It would first be necessary to establish the fact that 'suggestion' can produce anything approaching to this effect, not on a hypnotized patient, but on a crowd of people going about in their normal condition. * * * * Professor Otto Stoll assumes that a whole crowd were influenced as one hypnotised patient is worked upon by 'post-hypnotic suggestion.'"

We now come to another phase of the question — the antidote, or antidotes, employed to counteract the effect of glamour. "The receipt to prevent the operation of these deceptions," says Sir Walter Scott, "was to use a sprig of four-leaved clover." And, in illustration of this, he repeats a story of a Gipsy who once "exercised his glamour over a number of people at Haddington, to whom he exhibited a common dung-hill cock trailing, what appeared to the spectators, a mossy oaken trunk. An old man passed with a cart of clover. He stopped, and picked out a four-leaved blade. The eyes of the spectators were opened, and the oaken trunk appeared to be a bulrush."² In Dalzell's book, already quoted from, one also

1 (Longman's Magazine, Nov. 1894, pp. 104-106.)

2 (Minstrelsy of the Scottish Border: "Christie's Will," Note B.)

reads¹ that Zachary Boyd (who wrote in the seventeenth century) alluded to the benefit of 'four noked clover' as a preservative or remedy 'for juggling of the sight.' But both Scott and Dalzell specify other antidotes. The former tells us that a necromancer, or enchanter, of the fourteenth century, informed the Duke of Anjou, with reference to a certain illusion which he proposed to create, that if any one made the sign of the cross, "all shall go to noughte."² Dalzell, again, quotes Fordun (who also lived in the fourteenth century), to the effect that "a magician, who perverted the vision of a multitude, assembled to witness an exhibiton of his art in presence of William, the Scottish king, was defeated, simply by a priest reciting a passage from the Evangelists."³

With regard to the three first references, it will be found that in reality the same symbol is indicated in each case. Because all these represent the cross. Referring to the Irish Shamrock, Dr Jamieson⁴ remarks that it is "worn by Irishmen in their hats," as O'Brien says, "by way of a *cross*, on Patrick's Day." Of course, the ordinary trefoil is not strictly cruciform, but it is really the quatrefoil, or four-leaved clover, that is preferred; for it is the nearest approach, in the vegetable world, to the "Maltese" or "Sun" cross,—a very ancient symbol. It is, admittedly, because of its cruciform shape that the quatrefoil was so favorite a design in the tracery of mediæval church windows. Therefore, when the four-leaved clover was presented to the Gipsy, at Haddington, "the sign of the cross" was displayed, and his hold over the spectators failed. In what way this effect came about, I am not prepared to say. It may be that when anyone in danger of falling under the powers of evil could summon up sufficient strength to make the sign of the cross, whether with his fingers or by displaying something cruciform, the mere rallying of his energies was sufficient to dispel the antagonistic influence. Or, it may be, that the juggler himself so respects the cross, that when its power was visibly appealed to, he did not dare to continue his jugglery. It will be noted that the necromancer of 1381, above spoken of, was the first to inform the Duke of Anjou that the antidote to his jugglery was the sign of the cross. And although there is no direct evidence that that particular juggler was a Gipsy, yet the following statement, by Mr. Theodore Watts, seems to me to show that the symbol resembling the four-leaved clover, otherwise the Sun Cross or Maltese Cross, is still of superlative importance among Gipsies: "A Romani girl will tell you," observes Mr. Watts,⁵ "that the dark-blue punctured rosettes at the corners of her mouth, ornamental as she considers them to be, have something to do with luck as well as ornament. * *

¹ (Page 4.)

² (The Lay of The Last Minstrel: Note 2 M.)

³ (*Op. cit.*, p. 18.)

⁴ (Scottish Dictionary, s. v. "Glamour.")

⁵ (*Athenæum*, 21st Feb. 1885, p. 246.)

Tattooed on the breast of the South Papuan we find the same cross (or Sanscrit *trisula*), which the Romanis believe to be the most powerful of all symbols—so powerful that the rainbow will fade from the sky ‘at the very sight of it.’”

In conclusion, although the statements here made and the deductions drawn therefrom afford much room for discussion and for difference of opinion on various points, yet the main argument is, I believe, well grounded. And it will be seen that the acceptance of “glamours” as the mediæval equivalent of modern “mesmerism,” places many of the folk-tale incidents in a new light. For, on this hypothesis, it is evident that when various objects and individuals only *seemed*, by means of this agent, to be something very different from what they actually were, their fictitious appearance does not require to be discussed. “All was delusion, nought was truth.”

Dr. Douglas Hyde, in referring to an incident which occurs in an Irish MS. tale of the year 1763, observes: “The passage is of interest, because it represents a trick something almost identical with that which I have heard Colonel Olcott, the celebrated American theosophist lecturer, say he saw Indian jugglers frequently performing. Colonel Olcott, who came over to examine Irish fairy lore in the light of theosophic science, was of opinion that these men could bring a person under their power so as to make him imagine that he saw whatever the juggler wished him to see. He especially mentioned this incident of making people see a man going up a ladder.”¹

The following extracts from Mr. H. Rider Haggard’s story of “Allan’s Wife” (London, 1889,) are also to the point. In this story, Mr. Haggard makes a Zulu, “Indaba-zimbi,” *appear* to stab Allan Quartermain to the heart, in view of a large crowd of Zulus, and then bring him to life again. When it is over, Quartermain asks (pp. 94-5):

“How on earth did you do that, Indaba-zimbi?” I asked in amaze.

“Do not ask me, Macumazahn,” he gasped. “You white men are very clever, but you don’t quite know everything. There are men in the world who can make people believe they see things which they do not see.” * * * * *

And here I may as well state that I never got any further information on this matter from old Indaba-zimbi. But I have my theory, and here it is for whatever it may be worth:

“I believe that Indaba-zimbi *mesmerized* the whole crowd of onlookers, myself included, making them believe they saw the assegai in my heart, and the blood upon the blade. The reader may smile, and say, “Impossible!” but I would ask him how the Indian jugglers do their tricks, unless it is by mesmerism?

¹ (*Beside the Fire*; by Douglas Hyde, LL.D., M. R. I. A.; London, D. Nutt, 1890, pp. 190-191.)

The spectators *seem* to see the boy go under the basket, and there [be] pierced with daggers; they *seem* to see women in a trance supported in mid-air upon the point of a single sword. In themselves, these things are not possible, they violate the laws of nature, as those laws are known to us, and, therefore, must surely be illusion. And so, through the glamour thrown upon them by Indaba-zimbi's will, that Zulu Zimbi seemed to see me transfixed with an assegai which never touched me. At least, that is my theory; if anyone has a better, let him adopt it. The explanation lies between illusion and magic of a most imposing character, and I prefer to accept the first alternative."

At a later part of the same story, Indaba-zimbi again exhibits his occult power, this time as a clairvoyant. A foot-note (page 192) says: "For some almost equally remarkable instances of Kaffir magic, the reader is referred to a work, named 'Among the Zulus,' by David Leslie."

*The above Supplementary Notes were, of course, unknown to me when I wrote the paper entitled, "Mediæval Glamour and its Antidotes."

DEVIL WORSHIP AS AN EARLY AND NATURAL STAGE IN THE EVOLUTION OF RELIGION.*

BY DR. PAUL CARUS.

Surveying the accounts gleaned from Waitz, Lubbock, and Tyler of the primitive state of religion, the conviction impresses itself upon the student of Demonology that Devil-worship almost always precedes the worship of a benign and morally good deity. There are, to say the least, many instances in which we can observe a transition from the lower state of Devil-worship to the higher stage of God-worship; and it seems to be natural that *fear* should be the first incentive to religious worship. This is the reason why the dark figure of the Devil looms up as the most important personage in the remotest past of almost every religion, for *we fear the bad and not the good*.

Mr. Herbert Spencer bases religion on the unknown, declaring that the savage worships those powers which he does not understand. In order to give to religion a foundation which even the scientist does not dare to touch, he asserts the existence of an Absolute Unknowable, and recommends it as the basis of the religion of the future. But facts do not agree with Mr. Spencer's position. The savage does not worship the thunder because he does not know what it is, but because he does, to some extent, know what it is. He worships the thun-

*Read at a meeting of the International Folk-Lore Association, in Memphis, Tenn., Jan. 23d, 1895.

der because he knows the destructiveness of lightning ; he is afraid of it on account of the known and obvious dangers connected with it which he is unable to control.

Let us hear one who had carefully collected and sifted the facts. Tyler says : " Waitz, in speaking in his ' Anthropology ' of the Indians who are not as yet semi-civilized, states that the Florida tribes are said to have solemnly worshipped the bad spirit Toia, who plagued them with visions, and to have small regard for the good spirit, who troubled himself little about mankind." And Martius makes this characteristic remark of the rude tribes of Brazil : " All Indians have a lively conviction of the power of an evil principle over them. In many there dawns, also, a glimpse of the good, but they revere the one less than they fear the other. It might be thought that they hold the Good Being weaker in relation to the fate of man than the Evil."

Captain John Smith, the hero of the colonization of Virginia, in 1607, describes the worship of Okee (a word which, apparently, means that which is above our control), as follows (as quoted from Tylor, page 342) :

" There is yet in Virginia no place discovered to be so savage in which they haue not a Religion, Deer, and Bow and Arrows. All things that are able to doe them hurt beyond their prevention, they adore with their kinde of divine worship,—as the fire, water, lightning, thunder, our Ordnance peeces, horses, etc. But their chiefe god they worship is the Devil. Him they call *Okee*, and serue him more of feare than loue. They say they haue conference with him, and fashion themselves as neare to his shape as they can imagine. In their temple they haue his image evill favouredly carved, and then painted and adorned with chaines of copper and beads, and covered with a skin in such manner as the deformities may well suit with such a god."

Religion always begins with fear, and among savages, it may directly be defined as " the fear of evil and the various efforts made to escape evil." Though the fear of evil in the religions of civilized nations plays no longer so prominent a part, we yet learn, through historical investigations, that at an earlier age of their development almost all worship was paid to the powers of evil, who were regarded with special awe and reverence. Thus, in Egypt, the nefarious demon Seth, or Typhon, originally received higher honors than Osiris. Typhon was the deity of the desert, of drouth and feverish thirst and of the sterile ocean ; Osiris represents moisture, the Nile, the fertilizing powers and life. Plutarch says, on Isis and Osiris, chap. xxx, that " the power of Typhon, although dimmed and crushed, is still in its last agonies and convulsions. The Egyptians occasionally humiliate and insult him at certain festivals. They, nevertheless, propitiate and soothe him by means of certain sacrifices."

The primitive stages of the Hebrew religion are not suf-

ficiently known to describe the changes and phases which their idea of the Godhead had to undergo before it reached the purity of the Yahveh conception.

It is evident from various passages that the Israelites believed in evil spirits dwelling in darkness and waste places. (See Leviticus, chap. xvii, v. 7); Deuteronomy, chap. xxx, v. 17; Jeremiah, chap. xv, v. 36; Psalms, chap. cvi, v. 37, etc. Their names are *Seirim* (chimeras, or goat spirits), *Lilith* (the nightly one), *Sheddim* (demons). But it is difficult to say whether they are to be regarded as the residuum of a lower religious stage, preceding the period of the monotheistic Yahveh cult, or as witnesses to the existence of superstitions, which certainly haunted the imagination of the uncultured, not less in those days than they still do in this age of advanced civilization. There are, accordingly, sufficient indices of a latent belief in evil beings among the Hebrews, and of tendencies to personify the dark aspects of life.

The Jews, also, must have had a demon not unlike the Egyptian Typhon. The custom of sacrificing a goat to Azazel, the demon of the desert, suggests that the Israelites had just emerged from a dualism in which both principles were regarded as equal.

We read in Leviticus xvi:

"And Aaron shall cast lots upon the two goats; one lot for the Lord and the other for Azazel. And Aaron shall bring the goat upon which the Lord's lot fell, and offer him for a sin offering. But the goat on which the lot fell for Azazel, shall be presented alive before the Lord, to make atonement with him, and to let him go to Azazel into the desert."

The name Azazel is derived from the word *àziz*, which means strength; the god of war at Edessa is called Azal, or the strong one; Bel-*àziz*, the strong god, and rash-*àziz*, the head of the strong one, is the name of a promontory on the Phenician coast. Azazel, accordingly, means the strength of god, divine strength, or the god of strength.*

The mention of Azazel must be regarded as a last remnant of a prior dualism. Azazel, the god of the desert, has ceased to be the strong god; he has become a mere shadow of his former power, for the scape-goat is no sacrifice. Yahveh's goat alone is offered for a sin offering. The scape-goat is only sent as a messenger to carry out into the desert the sins of the people, and to give information to Azazel that they have been atoned for.

These vestiges of an older dualism, which, as sacrificial ceremonies, could only reluctantly be discarded, are still left in Hebrew literature. They were, however, revived or strengthened when the Jews came in contact with the Persians. The Persians, the inhabitants of Iran, were that nation in which

*Azazel is translated in the King James' Translation by "Scape-Goat," because the Hebrew scholars of former centuries did not understand the word. The Oxford Bible gives the correct translation in a marginal note.

man's fear of evil led to the combating of evil by the assistance of that power which is life-sustaining and beneficent.

The Persian religion is known as the most consistent and perfect system of dualism. We have little information concerning its origin, but we can, nevertheless, reconstruct it, at least, in rough outlines. For there are witnesses left, even to-day, of the historical past of the old Persian religion. A sect called the Izedis, are the fossil representatives of the Devil-worship that preceded the purer notions of Zarthustra's Ahura-mazda worship, as described in the Zendavesta. Following the authority of a German traveler, Tylor says :

"The Izedis, or Yezidis, the so-called Devil-worshippers, still remain a numerous, though oppressed, people in Mesopotamia and adjacent countries. Their adoration of the sun and horror of defiling fire accord with the idea of a Persian origin of their religion (Persianized-god), an origin underlying more superficial admixture of Christian and Moslem elements. This remarkable sect is distinguished by a special form of dualism. While recognizing the existence of a Supreme Being, their peculiar reverence is given to Satan, chief of the angelic host, who now has the means of doing evil to mankind, and in his restoration will have the power of rewarding them. 'Will not Satan then reward the poor Izedis, who alone have never spoken ill of him and have suffered so much for him?' 'Martyrdom for the rights of Satan!' exclaims the German traveler, to whom an old, white-bearded Devil-worshipper thus set forth the hopes of his religion."

This peculiar creed of the Izedis is, in so far, similar to the religion of Devil-worshipping savages, as the recognition of the good powers is not entirely lacking, but it is, as it were, a merely negative element; its positive importance is not yet recognized.

It is probable that the Persians in pre-historic times were as much Devil-worshippers as are the Izedis. But, in Persia, Devil-worship developed into God-worship, and this change of their religious views marks a step of progress which brought it about, that soon afterwards the Iranians became one of the leading nations of the world.

Actual Devil-worship continues until the positive power of good is recognized, and man finds out by experience that the good, although its progress may be ever so slow, is always victorious in the end. It is natural that the power that makes for righteousness is, by and by, recognized as the supreme ruler of all powers, and then the power of evil ceases to be an object of awe; it is no longer worshipped, and not even propitiated, but struggled against; and the confidence prevails of a final victory of justice, right and truth.

THE WORK OF THE KUNGER BAG.*

BY MR. ALEX. W. BEALER.

The work of the kunger bag !

How much of mystery is wrapped in these half dozen words ! To give in all its details the work of the kunger bag, would be to write the history of the negro man from the time he landed on the shores of the South down to the present day. And what a mass of folk-lore there is in the life of this self same negro ! It speaks to him in the budding trees of the spring-time, when the air is redolent with the breath of the dog-wood, when, through the haze that fills the atmosphere, as he follows the sleepy mule across the freshly plowed field, the weird and mellow music from his own sympathetic soul is ringing through the pines; it calls to him in the song of the Southern mocking-bird, perched upon a honeysuckle vine, pouring out his soul in liquid melody; sings to him in the cricket's voice that chirps when the sun is down, in the howl of the dog gazing upward at the fleeing moon, in the hoot of the owl, as he pops his bill and flies further back in the darksome wood; he hears this voice of mystery whispering to him above the sick man, tossing upon a bed of pain beneath the little cabin roof, he hears it in the tripping feet, as he sees, twinkling through the briar patch, the cotton tail of "Brer Rabbit," as he goes with a hop, skip and jump through the old worm fence, and scurries down the field; he hears it, in the squeal of frightened pig whose midnight slumber he has broken, in the squawk of luckless chicken roosting low; he hears it in the daylight, he hears it in the dark, he hears it in the cabin, he hears it in the "big house," at all times and in all places, for he is a man whose chief education consists of the weird, mysterious tales told about the cabin hearth-stone when the wind howls through the pines and the rain comes spluttering down the wide-mouthed chimney flue.

The negro has a fund of folk-lore that cannot be excelled, for the birds and beasts, both wild and domestic, from "Brer Fox," whose den is in the deepest woodland shade, to "Mr. Dog," who dozes the hours away in the sunshine falling on the steps, from "de lil sassy joree" of the swamp, whose piebald tail is flipping up and down, to "dat biggety ole rooster" as he leads his family across the lot—all have a language in which they speak to him when he is alone, and which he understands, a language that came to him—how, he cannot tell, any more than he can explain how he learned to talk. It lived in the hearts of the old time slaves, it has been transmitted to their children

*Read Dec. 30th, in Atlanta, Ga., at a meeting of the International Folk-Lore Ass'n.

and their children's children, from whom it will go down to generations yet unborn, and as long as the country stands, this language will be alive within the negro's heart.

The negro feels that the queer stories he has inherited from his ancestors are the exclusive property of the race, and the white man, having no part in them, has no right to hear them. On this account it is as difficult to get these stories as it is to catch him in any meanness, and if you are acquainted with the negro you will know that it is exceedingly easy to do this, about as easy as it would be to hold a living eel within the naked hand.

The kunger bag has always exerted a potent influence over the negroes of the south. Like a modern Delilah, it has robbed many a strong man of his strength, it has broken up households, and separated husbands and wives, it has brought them together again, it has given many a negro a mysterious power and enabled him to steal with impunity, it has filled the veins of the colored people with reptiles and given them untold horrors, it has helped many a dusky Romeo to win his Juliette, and in fact, to hear them tell it, this kunger bag has worked more wonders among the colored race than did Aladdin's lamp in the days its flame was at the zenith of its glory.

"De sho nuff kunger bag, boss, de regler ole time feller, hit sho wuz a site," said Uncle Rastus, when I asked him to enlighten me on this mysterious power. "Wen dem kunger niggers git reddy fer ter wuck, an rite now, boss, lemme tell you bout dat kunger nigger. De fuss time you see a knotty haired nigger, dess ez black ez ole Satan hisseff, an he got eyes sorter red roun de lids, an de balls streakedy strikedy wid red, rite den youk'n put hit down dat you'se a lookin on a kunger nigger, das him zackly. Well, wen dat nigger gits reddy fer ter kunger somebody, he gits a lil red flannel bag, an he drap in nine nails, nine needles, a lil bunch er hair he dun snatch off'n de head uv er corpse, er snake shed (de ole skin you know de snake dun wark off an leff), a pinch er black pepper, haff a red pepper an a powdered snake head. He tie up dem things in de bag an drap em in his pocket, an rite den, trubble's a breedin fer some nigger. He go rite ter de house whur he wanter kunger de nigger an put dat bag unner de do step. De man come long, an step cross de bag, an mos fo he kno it he got snakes an lizzuds in him, an dar dey gwinter stay twill he kin cotch em an cut em out, or twill he kin fine de bag. Ef he kin git his hans on dat air bag he muss hole fass ter her twill he come ter de place whur's dey's runnin water. He muss fling dat bag in de runnin water an dat mek de snakes an lizzuds an de kunger nigger run out'n de county, an de man, he kin git well."

Uncle Rastus, and he is a fair specimen of the average negro, looks with a distrustful eye upon the new fangled appendicitis and believes it is the work of the kunger bag in some cases, and in others, a desire on the part of certain physicians, who are jealous of the kunger doctor's powers, to get ahead of him in

this line of business." Uncle Rastus does not hesitate to express himself very freely on this subject.

"Look lak ter me," said he, "dat dese yere new fangled doctors iz a cuttin up an gwine on wuss'n de law lows fer, dess takin de plain, revren ole stummick ake an tyin a bran new name ter it. Stidder callin it de stummick ake, dess lak dey yuseter do in de olen time, yere dey dun pawed up de groun an sarched de yellements fer ter fine a hifalutin name ter gin it, an now, bless Gawd, you doan hardly know de ole chap wen he gits ter ramlin round yo gizzud all drest up in dat new Eitalyun name dey dun gin him. Pender—pender—whut is dat name, boss?"

"Appendicitis?" I ventured.

"Das de gent fum cross de water, boss, but I cler to goodness mer'tongue git so twiss up wid dat name dat I kin hardly git hit out'n mer teefes. Mandy say she see one uv em turrer day down yonner in dat air Dago's bernanner basket. She say hit uz de turbulless thing ever she iz seed, wid long hairy footsies an a regler kunger eye on him. She say dey cotch him on a bunch er bernanners dat come fum some furrin place er nur way off dere cros de water. Dey's a skerry lookin thing, boss, sho's you born, an das huccome dem doctors gin em dat furrin name, so's dey kin skeer fokes wen dey's got de stummick ake and mek lak *dey's* some punkin wen hit comes to docterin.

"Lemme tell you, boss, dese yere doctors can't fool de ole nigger, caze you know dey ain gwinter fine nuttin lak dat in a man lessn he bin kunger'd, an you kno de kunger bag ain gwineter wuck on nobody lessn hit's on a nigger, er a chap whut's good nuff ter be a nigger. Wen dem doctors gits ter wuckin on niggers fer dem critters, den you gwineter see supn happen, fer dere's a kunger bag loose somers roun de place an dey sho iz got ter be doctors dat iz docters. Now, sah, in de olen time dem things wuz yere but dey had de plain ole kunger name stidder dat hifalutin pendyseetis. A ole no count kunger docter got mad wid dat boy, Willyum Henry, er mine, an mon, he fixed him. He fixt up a kunger bag dess lak I dun tole you bout, an hit warnt more'n a week fo dey wuz a squawpyon dun built his den clost to dat boy's heart. Wen de critter wuz unnér de wedder de boy got along all rite, but wen de squawpyon wuz gayly he dess went a sailin roun dat boy's innurds, dess doubled him up, an fore he had time fer to cotch hiz breff yere he went er sailin down his leg, an him a howlin wid de roomatiz. Things went on dat er way fer nigh about six munse twill wun day I hear dat boy squall out, 'Yere he iz, Pappy; come yere quick, yere he iz; I dun cotch him.' I snatch de hatchet an run, and dar wuz de boy a holein ter his arm, dun had a string roun hit. De squawpyon wuz dess a rippin an a rarin down dere, but Willyum Henry, he hilt er holt ter de string twill de docter come an cut de arm open, an out de critter jumped. He dess quiled his tail up, walled his eyes, popped his jaws an spit amber all over de room. He wuz de

maddess lookin thing ever I iz seed twill I smashed him wid a bed slat, an den, dat boy he tun roun an got well. Hit uz de same sorter critter dey's callin pendyseetis now er days, but de papers in dem days warnt a rarin bout it and dat docter, he ain nuvver let on, dess went long bout his bizness.

"I knowed a nigger wunst dat uz kungerd an he died plum dead. I sot up wid de corpse, me an anur nigger. Long bout ten o'clock dat nigger gun ter swell up. He kep on a swellin twill de clock wuz a strikin twelve, an den he buss wide open, an yere come a great big soff shell turkle dess a scratchin todes me. I fetched a squall mo samer dan a wile cat, an I lit out fom dere, an dat ilder nigger, he wuz a pawin up de grabble close behine me. Maybe dey buried dat nigger, boss, an maybe dey didn't, but lemme tell you, Rastus warnt at de fun'l."

When a negro happens to take a shine to a married woman, he begins to lay his plans to break the tie that binds her to some obnoxious "nigger."

The gay Lothario goes by night to consult the kunger doctor of the settlement, and this bundle of wisdom, having received his pay in advance, goes at once to work to break the marriage yoke. He waits and watches until he sees the woman come from the house and walk barefooted across the yard. He finds her tracks, and from the impression made by the hollow of the left foot he scoops a spoonful of dirt, which he puts into a little bag of red flannel provided for the purpose. He next makes friends with the cur dog of the family, and from his back where the hair curls, he clips a little bunch and drops it into the bag with the dirt. The bag is not yet complete, for it must have a bunch of the husband's hair. Having secured this, the kunger doctor ties the bag and places it away in a safe place. He then watches for the husband until he finds where he has walked barefooted in the sand. A spoonful of dirt is taken from the hollow of the left track. A bunch of hair from the same cur dog where it rumples on his back is clipped, and a bunch of the woman's hair is secured, and all are tied up in another bag. With the two bags in separate pockets, the kunger doctor proceeds to the nearest place where two roads fork. One bag is there buried on the right hand fork and the other is buried on the left hand fork, and no earthly power can keep that husband and wife from separating. They will soon begin to quarrel, and it will be apparent that a separation is inevitable. The husband is generally the first to suspect where the trouble lies. He consults the kunger doctor, and if he is able to pay more than the first man, the doctor's services are secured and he begins to work for a reconciliation. He digs up the two bags and buries them in one hole, just where the roads come together. When this has been done, the clouds hovering over the couple are dissipated; in a few days the spell has been broken and they are as happy as they were in the days of the honeymoon.

Uncle Jerry was the name of a celebrated kunger doctor who

flourished in Southern Georgia during slavery days. He was reputed to be possessed of wonderful and even supernatural power, and was consulted every few days by negroes who wanted to secure kunger bags that would enable them to steal without being detected.

A young negro went to see Uncle Jerry and paid him a small sum for a kunger bag that would enable him to steal some meat from his master's smoke house without being caught. The morning after he secured the bag he came limping into Uncle Jerry's presence.

"Whut's de matter wid you, nigger?" asked the old man.

"Ole Marster cotch me," was the curt reply; and then he added, after a pause, "Unker Jerry, thought you sed dat kunger bag ud fix me so I could git somer ole Marster's meat?"

"Well, whut wuz de matter wid dat bag, boy?"

"I stole de meat, but ole Marster cotch me wid em; he fell on me lak a house dis mawnin, an I putty nigh dead."

"Whut sorter meat did you steal, nigger?"

"Hams."

"You fool nigger! dat uz a shoulder bag I gin you.. Ef you'd a stole shoulders hit ud a bin all rite, an ole Marster nuvver would er cotch you, but dess like a fool nigger, you stole hams an course you got cotched."

Uncle Jerry had another caller not long after this who wanted a kunger bag that would enable him to cuss out his old master for some fancied grievance. Having received his pay, Uncle Jerry delivered the coveted bag into the keeping of the negro, who hung it under his clothing next to his skin so that he might get its full effects.

The next morning, with a crick in his back, with one eye closed, and his head badly bunged up, the young negro limped into the presence of Uncle Jerry, who greeted him with "Whut's de matter wid you, nigger, didn't de bag wuck?"

"No, sah, but ole Marster did," was his reply. "I thort I was fixed, Unker Jerry, an I lit in and cussed ole Marster fum a way back yonner, but de fuss news I noed he knocked me down, and den he jump on an stomp me, an tromple me in de groun. Bless ef dat ole man didn't lak ter kill dis nigger!"

"An you cussed him rite to his face!" cried Uncle Jerry.

"Yasser."

"You better bless Gawd dat you'se a libbin dis mawnin. I didn't gin you no bag ter stan up an cuss de ole man ter his face, but I gin yer a fur off bag. You orter gone down ter de mile branch an cussed him way off dere in de woods, den de bag woulder wucked. You could er cussed him dere plum twill sun down, an I be boun he nuvver woulder toched you. You gotter know how ter use a kunger bag, nigger, das whut you iz."

One of the most popular kunger bags in the South is filled with love powder. It is generally made by a white man, a druggist, who is supposed to have a charm about him that he can place into the love powder and that will enable a negro

youth to win the heart of the most desperate coquette among the negro girls. The youth goes to the druggist and calls for love powder. The druggist takes a small quantity of carmine and mixes it with powdered sugar, the result being a powder of a delicate pink, more attractive to the negro eye than red lemonade when the circus is in town. Armed with this powder, the youth departs for the home of his lady love. On the way he buys some apples, oranges, cakes or candy, and into them he dusts some of the love powder. The balance is tied in a bright red bag. He must manage to get the girl to eat some of this powder and then, without her knowledge, he must rub the bag behind her ear or on the back of her neck. Soon, to his practiced eye, the girl is beginning to get under the influence of the powder and of the spell he is weaving about her, and the following conversation takes place:

"My deer, kine Miss, iz you got any objections ter my drawin my cheer ter your side an revolv'in de wheels er my conversashun roun de axle tree er yo understandin?"

"I has do objectshuns ter a genterman addressin me in a propah manner, kine sir."

"My deer Miss, dis worl iz a howlin wilderness, full er devourin animules, an you has got ter walk thoo hit. Iz you made up yo mine to walk thoo it by yoseff or wid some bole waryer?"

"Yer terrigation, kine sir, shall be ansered in a ladylike manner, ef you will prove ter me dat hit iz not fer a form an a fashion dat you puts de question."

"Bleeve me, kine Miss, dat I has a pertickler objick fer ingagin you in conversashun dis ebenin."

"Deer, kine sir, I has knowed many a genterman ter talk wid wise words an flatterin looks an at de same time he may hab a deceivin heart. May I as yer, kine sir, ef you has de full rite ter address a lady in a pertickler manner?"

"I has, kine Miss. I has seed many sweet ladies in my day, but never up ter dis time has I ever leff de highway er single gentermen fer to foller dese yere beakon lites. But nowm, ez I look in yo dark eyes, and hear your kine voice, and see your hones face, I feels dat I would be joyous ter come to yo beck an call in any time er danger."

"Deer, kine sir, I will reply in answer to yo terrigation, in de fuss place, dat sense I thinks you iz a hones genterman, I thinks a lady needs a perteckter in gwine thoo dis worl whur dere's many wile animules an plenty er danger."

"Den, kine honor'd Miss, will you condescen ter encourage me ter hope dat some glorious day in de future, I may walk by yo side ez a perteckter?"

"Kine sir, ef you thinks you iz a bole waryer, I will condescen ter let yer pass unner my observashun fum dis time on, and ef you proves wuthy uv a confidin lady's truss, some lady mite take you fer a perteckter, an dat lady mite be me."

The next thing in order is a high toned colored wedding,

attributed by the groom to the powers wrapped in the pink love powder.

If one negro wants to oust another negro out of his job, he makes a kunger bag, putting in it red pepper, sulphur, and powdered snake root. When the negro and the boss man are both out of the way, the outsider, who wants the job, slips into the office and rubs the bags across the things the boss is accustomed to handle. Having done this, he feels satisfied that the boss will soon discharge his porter, and give him the coveted job.

When a negro gets a new dog, by hook or crook, and wishes to keep him at home, he kills a lizard and buries the tail of it under the spot on which the dog sleeps the first night. It is said to be stronger than a chain in keeping that dog home ever afterwards.

Among the old time Africans, there was a kunger bag of great power in producing sickness. It was made from numerous bits of roots and the tail of a rusty lizard tied in a bag, and to prostrate the person selected, the bag must be placed under the pillow. The sickness remained and proved fatal, unless the bag was discovered and burned, which broke the spell.

Another plan pursued is to get nine nails and nine needles and tie them together with a strand of the victim's hair. These things are dropped into a small bottle filled with vinegar. The bottle is placed under the steps, and as soon as the man walks over it, a sudden pain strikes him and he goes at once to bed. Then a search for the kunger bag is made. If a bottle is found, it is taken to the nearest stream of running water and thrown in. Then the friends of the sick man begin work to break the spell. They take red pepper, black pepper, soap grease, snake root, black jack root and bear-grass root, and put them in a pot with water over a slow fire. This acts as a charm upon the man who is guilty of the kungering, and he is drawn, by some irresistible power, to the spot to inquire how the sick man is, arriving just as the pot is beginning to boil. He soon leaves and is never heard of again. The mixture, when it has been boiled to a salve, is removed from the pot, and is used to rub wherever the sick man has pain. He is rubbed once a day for nine days, and every time he leaves the house he must walk backwards down the steps. If he follows these directions implicitly, his recovery will be sure and sudden on the ninth day.

The foot of a white chicken, the tip of a black cat's tail and the breast bone of a chicken killed by an owl, are used extensively in kunger bags. If the cat has not a white hair on it, it is an awful "powful" kunger, and many negroes regard such an animal with so much dread that they will not live beneath the same roof with it.

Such is some of the work of the kunger bag, gathered from various sources and attired in attractive form. Did the kunger bag have its origin in the wilds of Africa, with its accompanying stories of mystery, and were they smuggled across the

dreary waste of waters in the keeping of some slave, to be handed down from generation to generation; or did they originate among the black men of the South?

I leave these questions to wiser heads than mine, for, having given, in various forms, the work of the kunger bag, my task is completed, and I shall retire to make room for others who may have some light to throw on this interesting subject.

NOTES ON EUROPEAN ARCHÆOLOGY.

BY DANIEL G. BRINTON, M. D.

The Transition from the Palæolithic to the Neolithic Age. Many of the European Archæologists have maintained that there is a gap or hiatus between the most recent of the Palæolithic deposits and the oldest of those which are Neolithic. They have suggested that the older race died out, and that Western Europe was almost uninhabited, when hordes from the East came in and took the land, bringing with them the art of polishing stone and other inventions, as well as some domesticated animals.

This opinion has lately been successfully combatted by Prof. Prestwich in England and M. Piette in France. The latter examined a cave on the river Arise (which is a branch of the Garonne, rising in the Pyrenees), where he exhumed numerous relics which seem to demonstrate the existence of a people intermediate in time and culture between the two periods named. He brings forward the evidence forcibly in an article in the *Bulletins of the Anthropological Society of Paris*, No. 3, 1895.

The Early Age of Metals in Italy. The use of metals, especially bronze, began in the Italian peninsula about two thousand years B. C. It was actively carried on by the Etruscans and by the Celtic tribes in the Po Valley, long before Romulus ploughed his furrow around the Palatine hill. Few regions are richer in relics of that early age, and a worthy study of it has lately been made by Oscar Montelius, of Stockholm. His handsome volume, "*La Civilization Primitive en Italie*," with over two thousand figures and 134 plates, has been published by the royal printing office of Sweden, and is a mine of information in regard to the proto-historic epoch in the Italian peninsula. It is not a closet compilation, but based both on a complete study of previous writers and personal investigations in most of the principle stations and museums.

On Crystal Charm-Stones. The notion that a transparent stone, such as a rock crystal, possesses magical powers and may be used in divining, is one widely prevalent among the primitive tribes and lower classes of both the old and new

worlds. In the last volume of the proceedings of the Society of Antiquaries of Scotland, Mr. Geo. F. Black describes one until recently employed for such purposes in Scotland, and, in passing, adds some curious particulars about crystallomancy a century or two ago in Great Britain. "The operator first muttered a formula of conjuration over the ball, and then placed it in the hands of a chaste youth or a virgin, when the spirit summoned would appear, or the desired answer would be visible on the surface of the ball."

Human Sacrifice in Europe. That human sacrifices as bloody as those of the American Indians prevailed in Europe down to a comparatively recent date cannot be questioned. In the last volume of the "Correspondenz-Blatt" of the German Anthropological Society, Dr. Höfler gathers a mass of information about them. The usual sacrificer was the house-father or head of the tribe, called by the Teutons the "Gode," or good one (whence the English, God). He plunged the knife in the breast and tore out the heart and offered it to the idol, just as did the Aztec priest. Children were the favorite victims, and they were slain in Scandinavia within historic times. Portions of the body were dried or smoked, and employed as charms or as medicine. German folk-tales still speak of the dried finger of an infant as a valuable medicament. How near are the most cultured nations to the period of primitive savagery!

Origin of Ancient European Religions. Almost every year some learned book is issued tracing the religions of ancient Greece or Italy, or Scandinavia, to Asiatic sources. Language is the usual support of such theories, but myth and ceremonies are also called in. One of the latest is by Regnaud, published in Paris in 1894. It is ably reviewed by Prof. F. A. Cannizzaro in the Acts of the Roman Anthropological Society. The reviewer points out with entire justice how inconclusive it is to trace historic connections between such religious customs as the worship of fire, burning the dead body, etc., which are found here and there over the whole earth.

The Stone Circles of England. In a discussion of the stone circles existing in England some members of the Anthropological Institute expressed the opinion that they were constructed two or three thousand years, B. C., and from that down to the Roman invasion. Many of them are certainly sepulchral in purpose, but others, located in commanding positions with the larger stones at the northern end, it was suggested might have been for observing or worshipping the pole star. It was not obvious from the remains who their builders were, but from their position they must have been members of the Celtic tribes inhabiting Southern England when the Romans arrived.

Ancient Dwarf Races in Europe. Bones of a small race of men have been found in several ancient cemeteries in Europe, notably in Northern Switzerland. Their examination has led Prof. Kollman to the surprising conclusion that, "These smaller

varieties have been the predecessors of the now predominant type of full-sized humanity." (Journal of the Anthropological Institute, Nov., 1895.)

Such a view is not in accord with the observations on the oldest remains of human skeletons from the caves. These indicate men of ordinary stature.



ANCIENT HEBREW SCROLL
SHOWING THE MANNER OF KEEPING THE ANCIENT WRITINGS

PALESTINE EXPLORATION.

By THEODORE F. WRIGHT, PH.D., U. S. SECRETARY P. E. FUND.

A very perfect reproduction of the great Contour Map of Palestine has been made by the collotype process. It is of a size to be held in the hand, and will be of use in classes. With a copy of the great map in the lecture-room, and a collotype in the student's room, good work can be done, which it would be impossible to do with the older maps.

Of course, a new map of Jerusalem will soon be in order, for the excavations show where the old wall was, and enable us to put in the gates at the points, which could never have been ascertained in any other way. All of Nehemiah's descriptions, once so unintelligible that scarcely any two scholars agreed, are now as plain as any other Bible language.

At the recent meeting in New York of the Society of Biblical Literature and Exegesis, I had the honor of reading a paper to show that the work by Dr. Bliss has already solved the problem of Nehemiah's Night Ride, and put an end to a controversy in which all parties are now seen to have been in error.

Those who visit the city while Dr. Bliss is going on with his work, will gain a clearer knowledge of the old masonry than can we at home, and I greatly regret to learn that some, who had made their plans to go, have given up doing so. This is a great mistake. There never was a better time. There are, in ordinary years, too many tourists to be well accommodated with lodgings and horses. This year every one will get the best, and thus the opportunity will be one of a life-time. There is, and has been, no disturbance in Palestine proper, and there is no reason to think that the least obstacle to travel exists. Indeed, the serious trouble of quarantine is not at present to be feared.

Whatever the outcome of the present difficulties, I think that some degree of European interference may be expected; and this will certainly improve the facilities for travel. No one in Palestine, except the officials, really regards the government arrangements with full approval, and thus there will be no objection made to any improvements which may come in,—such as postal facilities, better roads, more even taxation, and sanitary regulations. As it is, however, the land is gaining every year in some ways, especially as to agriculture.

In Jerusalem, foreign interests are so great and the foreign population is so large that there is no real danger. It is the one place in the whole empire where European powers have the most reason to interpose if there shall be the least threat of violence. The great buildings put up by the Greek church are, in fact, not missionary property, but national structures, officially recognized by Russia. In a less degree, but still with a certain official connection, the English, French, German and Austrian buildings stand supported. The Armenians are active in Jerusalem, and their buildings may be in some danger; but, as any outbreak would endanger the whole city, I feel that it would not be permitted.

In our distress over the sufferings of the innocent, we must not forget that there are not a few among the Turks who would welcome a change to a constitutional government, and those who are interested in explorations must especially remember with gratitude, the archæological interest and services of Hamdeh Bey, Secretary of the Interior.

NO. 42 QUINCY STREET, CAMBRIDGE, MASS.

EGYPTOLOGICAL NOTES.

BY REV. WILLIAM C. WINSLOW.

Discoveries at this date resemble elections when the "returns" are not in. Dr. Naville is at Thebes to complete his triumph at Dêr-el-Bahari, and Dr. Hogarth and Mr. Grenfield are already on the track of important discoveries in the Fayûm; but the returns, called results, are yet to be announced. Nor has the splendid volume upon the temple of Queen Hatasu, overdue, come to hand (this February 27th), and inanition is my cry just now.

One of the Fund's staff, Mr. Percy E. Newberry, writes that he has been working at some of the ancient kingdom tombs at Thebes, and that he has discovered in the northern Asasif two tombs, which, without doubt, belong to this early period. One of them is the tomb of a "governor of the nome," whose "good name" (*ren-ef nefer*) was Ahy; the scenes in it are executed in relief and well preserved. The other is in a very mutilated condition, but he hopes, before long, to make out most of the inscriptions in it.

He has also made many other important finds in the Theban necropolis this autumn; but perhaps the most interesting is the discovery of a parallel text to the one in the tomb of Rekhmara, giving the duties of the *Wezir* of Thebes. By this new text he hopes to restore much that is defective in the Rekhmara inscription.

THE MUMMY in one of the cases sent from Dêr-el-Bahari to Boston, I find to be that of Her-maut-aa-nert, the mother of Set-tehuti-af-ankh, the Prophet of Mentu. The ushabti boxes belong to it, with a jackal to lie on the foot of the outside coffin. The foundation deposits, such as are sent to Chicago, are quite interesting.

BENI HASAN is to be further depicted, as volume III, needed to complete the full publication of those famous tomb-scenes, will contain colored hieroglyphs and details, representing the use of flint during the XIIth Dynasty. I judge this will be useful to our paleologists, like Prof. H. W. Haynes.

SIR T. WILLIAM DAWSON, F. R. S., of Montreal, has been elected Vice-President of the Fund for Canada. There could be no better choice, and Sir William honors the Society in going upon its official roll. It is expected, that by next autumn, at latest, at least one American committee to aid in administering the business affairs of the Society will have

begun its duties. I have earnestly advocated this measure, and I believe that all our great cities should have a committee to represent and present our cause and aid in collecting funds. The respective museums should all share in the spoils. The special fund of \$500.00, for transcribing the mural scenes disclosed at the temple of Queen Hatasu, started by Mr. E. Brinton Coxe, of Drifton, Penn., needs recruits. He gives \$50.00 on condition that nine more give each that sum.

THE TOMB OF PAHERI.

DR. J. J. TYLER, the scholarly antiquarian and Egyptologist, edited for the eleventh volume of the Egypt Exploration Fund (Ahnas), a concise narrative of the results of his labors at the tomb of Paheri at El Kab, with ten illustrative plates. It was but so much stimulus to the archæological appetite, for Paheri was Nomarch of the III^d nome of Upper Egypt, and his tomb in Nekheb, its capital, is splendidly illustrated with scenes in the life of Paheri, which may be assigned to the age of Thothmes III. The tomb is a miniature Beni Hasan in its characterizations of business, daily and social functions.

Dr. Tyler now publishes the initial volume in a series of six, intended to reproduce the decorations and text in their entirety, and exactly as they now appear. It is an *édition de luxe*, in which the drawings are presented on a large scale by collotype process, the edition being limited to 250 copies, at \$10.50 per copy (each volume), which may be ordered from the office of the Fund at 15 Blagden street, in Boston. This royal volume, measuring 25 x 20 inches, contains an exquisitely finished frontispiece in color, fourteen collotype plates and three lithographs. The accomplished author is performing a labor of high artistic merit of great archæological value, and of much interest to all who make the monuments of Egypt either a study or a topic for reading. The tourist, in his study, as he scans these plates, will be carried, in mind, back to the sculptures and mural decorations which he inspected while he journeyed up and down the most historic and enchanting of all rivers.

Let me give an impression of the contents of this book which so brilliantly depicts to us the doings of a Prince that lived 1500 B. C. Take the frontispiece and plates X, XI and XII, which panoramically present "The Banquet," as it is termed. Paheri and his wife sit at a separate table, and their son, Amenmes, performs before them a ceremony of offering that is probably used only at feasts to the dead. Paheri's father, Atefrura, and his wife Kem, and Paheri's maternal grandfather, Aahmes, and his wife, Apu, sit at two tables. The rest of the figures are in four groups, seated on mats, and waited on by male and female servants, while musicians perform. Excepting the six principal personages, the guests all wear conical headpieces, often worn on such occasions. Over

each person is placed his or her name (so that they may be recognized A. D. 1896!), and over each of the women is a bit of conversation, imaginary or otherwise. A lotus bud or flower is usually in the hand, and most of the women have one bound round the head-dress. I give only a few particulars. In a rectangular space is a *menu* of the offerings, twenty-two in number, among which are *mu*, water, *arp*, wine, and *bat*, honey.

Amenmes officiates, wearing the leopard skin, used on such occasions. He says what is a kind of "grace before meals" at banquets to the living or dead: *En ka-ten per kheru em khet nebt, au uab*. It may be commended, for brevity, to many a prolix blessing-asker of to-day at prandial festivities. In the top row of notables, the brother of Paheri, Herari, "receives all good things and makes a holiday." Behind Herari sits Paheri's second cousin, Teta, "an attendant of his Majesty;" next, is cousin Mezay-se, and then his uncle Mey, who declines to drink deeper, although the cup-bearer says, "Ut-ua nekt; uah-a tu." Sensenbet, one of the females, is addressed, "Drink, do not refuse; see, I am not going to leave you;" and Thupu seconds the servant's importunity, "Drink! do not spoil the entertainment; let the cup come to me; it is due to the Ka to drink,"

Behind the orchestra (stalls?) are Amen-sat and Tetuta, great-aunts of Paheri, and Tetuta's daughters, Zab, Ty and Nub-em-nehebt. But I make no more mention of the living figures in this tableau. Indeed, everybody seems very much alive, although they died 3,400 years ago. The plates abound in these representations, of human life, mirth, solemnity, meannesses and excellencies of character and actions, at that pre-Mosaic time. We owe Dr. Tyler's energy, talent, generosity a big archæological debt for his royal volume, which should find a home in many a public library. We await volume II with a keen archæological hunger.

ARCHÆOLOGICAL NOTES.

BY THE EDITOR.

THE HITTITES.—A dozen years ago Dr. Schliemann found on the ancient site of Troy curious monuments and vases, the style of which was neither Greek nor Egyptian. They have since been shown to be Hittite. Recently deciphered hieroglyphics have also brought new evidence. Yet, the whole matter has been under controversy, the cuneiform inscriptions claimed for the Hittite people being interpreted differently by different scholars.

Recently the whole matter has been discussed, back and forth, by scholars of different nations. An Italian Jesuit, Cesare de Cara, has published a work of rare scholarship, entitled "*Gli Hethai-Pelasgi*," the very title of which indicates the new theory proposed; His claim is that the Hittites and the Pelasgians, the ancient, prehistoric inhabitants of the Grecian countries,

were one and the same people. He finds in the Hittite civilization and culture of Asia Minor the source and fountain-head of the civilization of the Greco-Latin races of Southern Europe, so that both the classical nations of antiquity, Greece and Rome, builded on the foundation of an originally Semitic and Asiatic culture, and that the civilization of the two nations of classical antiquity was not original with them, but was borrowed from the East, yet not directly, but through the medium of the Pelasgians, the original inhabitants of the southern countries of Europe, who in turn had come across the Hellespont. This enigmatical race of antiquity, whose very existence had been demonstrated to the satisfaction of historians only by the evidences furnished recently by the archæologist's spade and pick, thus becomes the great civilizing factor of the ancient world, as the Hittites and Pelasgians are declared to be identical. The origin of this Hittite civilization dates back to the second millennium before Christ, and was transplanted to Europe in prehistoric times.

This line of thought had been engaging the attention of the French archæologist, Solomon Reinach, even before the publication of the de Cara theory, only that Reinach, had inverted the order of development and had not derived the Pelasgians from the Hittites, but the Hittites from the Pelasgians, and pictured the migration of this people not from the East to the West, but from the West to the East. The leading English scholar on the Hittite problem, the enthusiastic Oxford Orientalist, Professor Sayce, has, in *The Academy*, declared himself as favoring the theory of the Italian savant.

A new turn in the discussion has been taken by Professor Jensen, of the University of Marburg, acknowledged as a leading specialist in cuneiform literature. In the German Oriental Society *Zeitschrift* he has discussed, in detail, the Hittite finds made in Sindshirli, in Syria, by a German company of explorers, and containing a rich abundance of inscriptions. He declares that these inscriptions, upon which so much of the Hittite theory is based, do not justify such an historical superstructure, and that they date from a period when the Hittite empire had long since disappeared from the historical horizon. According to Jensen, these inscriptions date from 1000 to 500 B. C., and are not Hittite at all, but are written in a Cilician dialect, and accordingly are not Semitic, but are Indo-European, they agreeing in many particulars with the Armenian.

Professor Zöckler, of Griefswald, in the *Beweis des Glaubens*, discusses these new theories and shows that even according to Jensen's criticism the theory that the Hittites and Pelasgians were one people originally is not invalidated, only the date of the Sindshirli monuments and of the state of civilization represented by them can not be regarded as so prominent a factor in

the oldest culture of the Oriental peoples as had been supposed. At any rate the identification of the two peoples is a possibility, almost a probability, and with the confirmation of this supposition the earliest history of Western Asia and of Greece and Rome assumes a different aspect.—*Translated and Condensed for THE LITERARY DIGEST.*

M. DE QUATREFAGES, the French ethnologist, has made public his conclusions with regard to the origin and distribution of the human race. He says all mankind came from a central mass in Northern Asia and that there were three fundamental types—black, white and yellow. These three types scattered over the world and intermingled, forming, in course of time, seventy-two distinct races of human beings, which is the number of races classified by our best ethnologists in the tabulations brought down to the year 1890. The learned De Quatrefages believes that the American Indians came from a "blending of white and yellow races with a local quarternary race."

MIZPAH. — Two thousand nine hundred and thirty-five feet above the sea, Mizpah is at once the most conspicuous height in Central Palestine, and itself commands the widest view, being nearly four hundred feet above Jerusalem. Tradition points out the tomb of Samuel, covered by a mosk, once a noble crusader's church. The houses are ancient, partly hewn out of the rock. From the tower of the mosk almost every town in Benjamin may be recognized, spread out like an embossed map. Somewhere on the slopes, southwest towards the wide Philistian plain, between Mizpah and Shen, which has not been identified, must have been the memorial stone of victory, Eben-ezer, now a household word in Christendom, whose name, perhaps, may be traced in the village of Deir-Aban, a little to the east of Bethshemesh, and just where Jerome places it. The panorama from Mizpah gives an idea of the encroachments which the Philistines had made even upon the hill country, and of the completeness of their defeat when Samuel not only recovered all the western hill country of Benjamin and Judah, but also the maritime plain from Ekron, the northernmost inland Philistine town, to Gath, or Beit Jebrin, in the south. In this connection the expression in the fourteenth verse, "there was war between Israel and the Amorites," is full of significance. The Amorites inhabited many of the hill cities, from which they had never been ejected, or of which they had recovered possession, and this verse shows that they too had suffered under the iron rule of their neighbors of the plain.

"SAMUEL TOOK A STONE, AND SET IT."—The erection of stones to mark a victory has been, and is, universal among all nations, from the rude cairn of the ancient Britons, or the monolith which one sees not unfrequently in the deserts both of Africa and Arabia—a short pillar, propped by a few smaller stones round it, to mark some tribal skirmish, which your Bed'

ween guide is ever eager to point out to you—to the sculptured shaft, the memorial cross, or the obelisk, which tells of the carnage in many a battle-field in Europe. Man has ever recorded his triumphs in stone—rarely with the humility which raised Samuel's Eben-ezer.—H. B. TRISTRAM, in *S. S. Times*.

FOOD OF THE MOUND BUILDERS.—In July last, H. I. Smith and three experienced excavators, began exploring on the farm of Mrs. Fanny E. Fox, near May's Lick, Mason County, Ky. A creek wound its way around a peninsula-like plateau, which, owing to the nature of the burned soil, pieces of pottery, bone and charcoal, seemed to be undoubtedly the site of a large village centuries ago. A mound, oblong in shape, and about five feet high, was found. This mound was about sixty feet on the longest axis, and was thickly wooded. A walnut stump nearly three feet in diameter was a certain proof that the place must have been undisturbed for many years.

Most of those buried in the mounds were found in the rudest sort of box made with slabs of stones. These stones probably came from the creek below, and are just in the condition in which they were found on the banks, where the frost and thaws every year add a new supply from the rocky sides of the stream. Through the crevices the rains filled these rude graves with earth, and it was in getting this away from the bones that the delicate work came in.

They found 207 graves in the three mounds they opened, and in the burial places about the fields. These were generally isolated skeletons and were buried barely a foot under the ground.

They found any amount of pottery, but no unbroken jar. This is easily accounted for, owing to the action of the frost. The jars soon filled with earth, which held the rain. This would get frozen stiff, and as soon as the thaw came the jar broke into fragments. In some cases we found nearly all the pieces, and will be able to build up the jars again. One jar that was placed on the left breast of a child will be easily and perfectly put together. This pottery will be arranged, so I am told, in a series. The perfectly plain first, and then the first attempts at ornamentation, and so gradually up till the most highly ornamented is reached. One small piece was found that had the rude figure of what was probably intended to be a lizard engraved on it.

In their searchings also they found remnants of the food on which these people lived. Among their finds were clam shells in great abundance, a piece of fresh water turtle, bones of bear, deer, raccoon and wild turkey, and charred corn, beans and walnuts. These mounds were particularly rich in bone instruments in every stage of manufacture. The legbone of a turkey seems to have been chiefly used for making awls and needles. It is proposed to show the work of making the different bone implements from the parent bone up to the perfected article. All these exhibits ought to be useful lessons to the student.

EDITORIAL.

THE LUNAR CULT AND THE CALENDAR SYSTEM

A very interesting subject of study is the Lunar Cult in its connection with the calendar system. This prevailed very extensively in Oriental countries and had as much to do with the calendar and the system of time reckoning as the Solar Cult. But in this connection it does not seem to have been so prominent; or, at least, if it were so, it has not received the attention of scholars so as to be put in its proper place.

We propose to take it up as our subject, but we shall begin with the inquiry, whether it existed among the Mound Builders, and whether there was any calendar system connected with it? It is well known that the Solar Cult was very prevalent among this people, though it is uncertain whether that Cult furnished them with a calendar, except perhaps in its very rudest form.

We may suppose that the Lunar Cult and Solar Cult were associated together, and that these two were accompanied by the fire cult and perhaps a modified form of totemism or animal worship; for we do not find the systems were separated from one another, or that there was any differentiation in the religions of the ruder people. Our information will be drawn from the symbols of the Mound Builders, but may be supplemented by the traditions and myths of the surviving tribes.

It seems that the nature powers and the elements, as well as the heavenly bodies, were all worshiped as divinities, and were symbolized by particular figures: the sun by the circle, the moon by the crescent, the four points of the compass by the cross, the revolution of the sky by the suastika, the rain by the serpent, the water by the spider, the air by the bird, the earth by the looped squares, and the fire by the spiral lines.

The four quarters of the earth and sky were also symbolized; as the serpent was divided into four parts with a circle at each joint. The bird appeared upon the four sides of the looped square. The circle, itself, was attended with four points or eight points, and was divided by the cross into four parts.

The spider had eight legs, each one of them marked with four bands. The body, itself, was divided into four parts. There were also four sacred colors, each color sacred to a different point of the compass. The four seasons were thus symbolized as well as the four elements; thus making "four" as the sacred number.

When, however, we come to the Lunar Cult we find that the number "three" is introduced, for there are generally three crescents associated with the circles on the shell gorgets, and they are in the centre of the circles. (We do not know that there was any significance in this; yet, if we multiply the four circles by the three crescents we shall have the number twelve, which is equal to the number of months in the year, made up of the four seasons of three months each.)

These symbols are always associated together, and are very seldom found separate. They show that the Lunar Cult was closely connected with the Solar Cult, and that there was a unity to the nature worship. The sun presides over the four quarters of the sky and ruled all of the seasons, and controlled even the various elements, and was the great "master of life."

It is interesting to go over the different symbols and to notice their unity and close connection. We find these in the earth-works of the Ohio river, in the shell gorgets which are common among stone graves, in the copper relics found among the mounds. We also find them in the fetiches and idols of the Pueblos and Cliff Dwellers, occasionally in the carved columns and totem-posts of the northwest coast, but they are more numerous in the sculptured relics of the southwest.

I. Let us take up first the symbolism contained in the earth-works, and notice the prevalence of the crescent with the circle, square, and other figures.

We have already stated that these were erected by a class of sun worshipers who were agriculturists, but lived in walled villages, and surrounded their village enclosures with symbols of their Solar Cult. We find that they were also worshipers of the moon, and embodied the symbols of the Lunar Cult in their sacred circles, dance grounds, and altar mounds. This will be shown by the different groups.

The Junction Group is the most remarkable. "It consists of four circles, three crescents, two square works, and four mounds. In this group there are two small mounds enclosed by a ditch and wall, which are the usual sign for the symbol of the sun. Almost touching the circle enclosing the mound is a crescent, 130 feet in diameter, and near this is another crescent which terminates in a mound of sacrifice, 7 feet high by 45 feet base. This mound is composed of clay. Three feet below this surface was a layer of wood coals; seven feet below the surface were found three skeletons which had been placed upon an altar and covered with earth mingled with coals and the fragments of hard-burnt clay. Upon the altar were found a number of relics, which clearly belonged to the Mound Builders. The group is situated upon a beautiful plain forming the third terrace, overlooking the stream, and probably marks the site of an ancient dance ground."

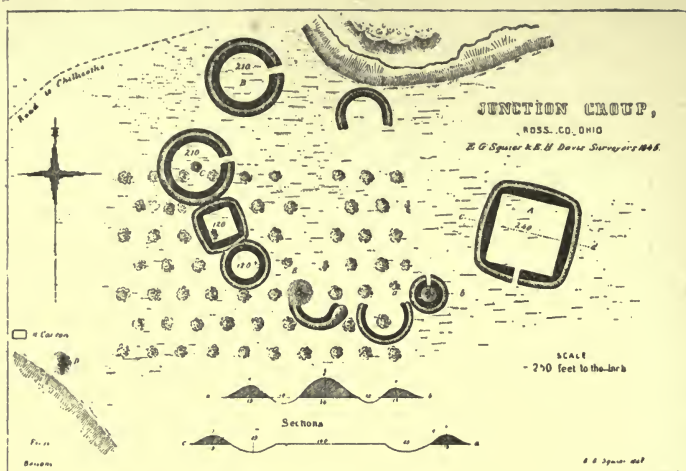


FIG. 14. CRESCENTS AND CIRCLES NEAR SACRED ENCLOSURE

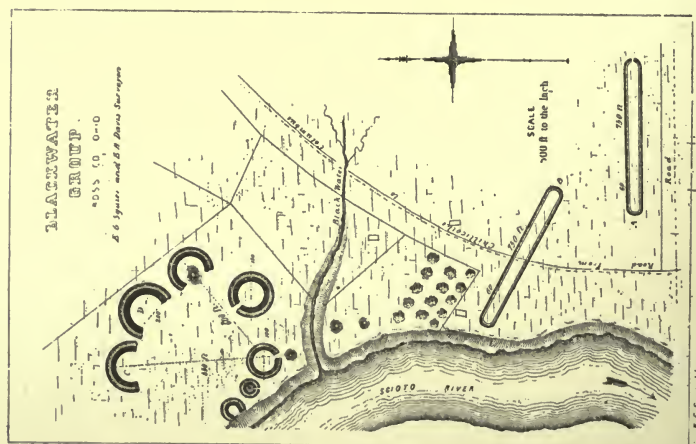


FIG. 15. CRESCENTS AND CIRCLES AND OBLONG ENCLOSURES

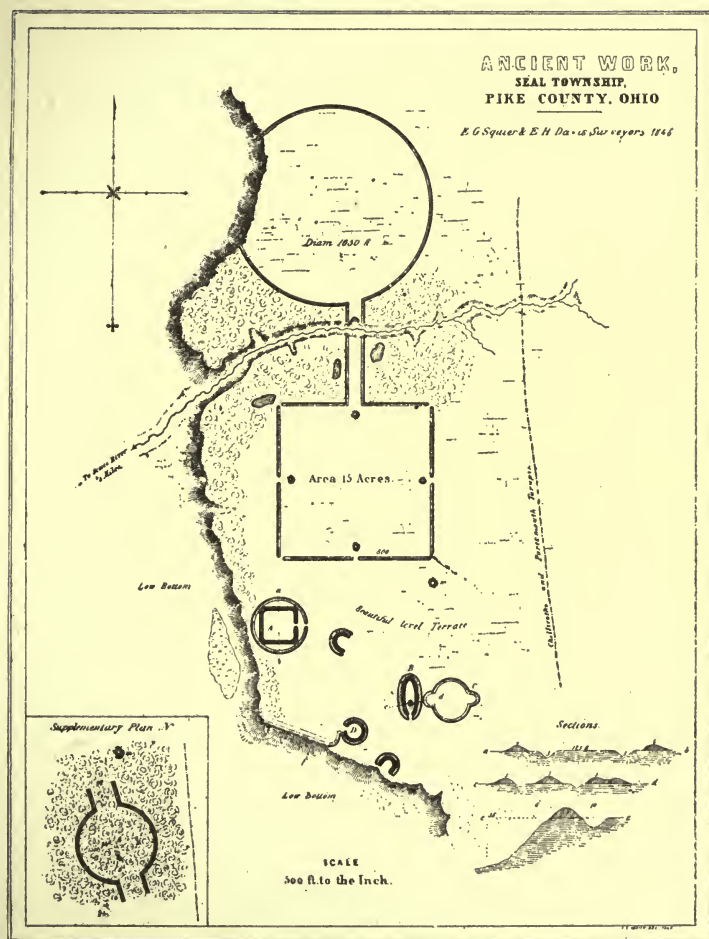


FIG. 16. CRESCENTS AND CIRCLES, NEAR SACRED ENCLOSURES

Black-Water Group resembles this in the situation and arrangement of the circles and crescents, but is especially remarkable for its singular parallels, which are supposed to be the place where prisoners formerly ran the gauntlet. It is probable that the circles mark the spot where the prisoners were offered as sacrifice after they had passed through the ordeal of fire.

The ancient works in Pike County contain the usual circle and square, but near them, on the terrace overlooking the Sciota river, is the group in which various symbolic figures may be recognized—the square, the circle, the crescent, the ellipse and square in combination.

Nothing can surpass the symmetry of these works. The fact, that the large circle and a portion of the small circles have been partially destroyed by the wasting of the bank, shows that these works were very ancient. The river now runs at a distance, though its ancient bed can be seen below the bluff.

It is impossible to resist the conviction that some significance is attached to these singular forms that the Lunar Cult prevailed in this region.

(a). Crescents are sometimes found inside of the smaller circles, the ditch being between the crescent and circle. Specimens of this may be seen at Hopetown. Here the small circles open out from the large squares and the crescents are inside of the circles. Another specimen can be found at High Bank. Still others may be seen at Newark. These circles are called by Squier and Davis, watch-towers. They may have been estuffas, or sweat-houses. If so, the circle and crescent would be natural religious symbols.

(b). It is well known that crescent shaped pavements have been found in the depths of the altar mounds at Mound City, the crescent being made of silvery mica.

The mica was composed of small discs which overlap one another like the scales of a fish. A crescent-shaped pavement was also seen surrounding the great mound at Circleville. The graded way which reached to the summit being placed above the pavement.

(c). Another evidence is furnished by the shell gorgets which are so numerous among the stone graves of Tennessee, and the lodge circles near New Madrid, Missouri. There is a striking resemblance between the figures contained in these gorgets and the geometric figures which are embodied in the earth-works of Ohio, suggesting that the same symbolism was known among two or three classes of Mound Builders.

Moreover, various ceremonial maces and ornamental objects made from banded slate, have been found in the mounds of Ohio. Some of these maces bear the shape of a double crescent; others the shape of a double disc, suggesting the thought that they were symbols to the sun and moon.

The same superstition was expressed by the people of the stone graves, who placed upon the bodies of the dead, amulets in the shape of shell gorgets, on which were engraved the circles, squares, crescents, serpents, and other symbols, showing that there was a special charm to this symbol.

Cult was common among the Mound Builders. The same system also seems to have been prevalent among the various tribes which survived the Mound Builders.

II. We turn from the symbols of the Mound Builders to the myths of the Aborigines.

The following are the myths in reference to the moon which are extant among the wild tribes:

"The Mandans hold that the sun is the residence of the "Lord of Life." In the moon dwells the Old Woman who Never Dies. She keeps watch over all our actions. She has a white band around her throat, in allusion to the white line of the crescent. She has six children: the oldest is day, the next younger is the sun, and the third is night; one daughter is the "high revolving star" (alluding to the polar star), and Venus, the "child of the moon;" and, "she who wears a plume" is the morning star. The second daughter, called "The Striped Gourd," is a star which revolves the polar star. The third daughter is the Evening Star, which is near the setting sun.

The Old Woman who "never dies," sends, in the spring, the water fowl, swans, geese, and ducks, as symbols of the kinds of grain cultivated by the Indian; the wild goose signifies corn, the geese, the gourd, and the duck, beans. It is the "Old Woman" who causes these plants to grow, and therefore, she sends these birds as her representatives.

There was a sacredness to every season, and there were dances and ceremonies which were celebrated at the beginning of each season. Even the Northern Indians had their ceremonies. They were especially noted for their traditions about the moon, as every season had its peculiar kind of moon—the moon of the hunters, the moon of the planters, the harvest moon, the dry moon and wet moon. In fact, the changes of the moon were more closely watched than the changes and positions of the sun, for they were more easily recognized and associated with the changes of the seasons. The sun was the great divinity, the Master of Life, and the moon was his companion, and the stars were the children of the sky; as in classic lands, the sun was the great father of all, and there were different divinities for the different operations of nature and the elements. Ceres for the corn and crops; Ares was God of War; Artemes was the God of the hunter.

So in this country the Aborigines had supreme gods which were identical with the sun and moon, and inferior gods who ruled the seasons and the elements.

According to Maj. Powell, the mountains, hills, valleys, and great rocks have their own special deities—invisible spirits. Lakes, rivers, and springs were the homes of the spirits. All these had animal forms when properly presented. But the heavenly bodies are either creative personages, or ancient men, or animals, translated to the sky. Gradually, the gods of the firmament, the sun, moon, and stars, are advanced to supremacy.

The clouds, the storms, the winds, day and night, dawn and gloaming, the sky, earth, and sea, and all the various phases of nature perceived by the barbaric mind, are personified and deified, and exalted to a supremacy; while all the gods of the lower stage that remain—animals, demons, and all men—belong to an inferior class. The gods of the sky, the shining one, those that soar on bright wings, those that are clothed in gorgeous colors, those that come from we know not where, those that vanish to the unknown, are the supreme gods.

Thus we see that the Lunar Cult as associated with the Solar Cult, and a regard for the earth and the elements as sacred, is embodied in the myths.

The earth is not regarded as supreme, though there was always a sacredness about the fresh earth, or the virgin soil.

Miss Alice Fletcher has spoken of this. She says, "The mellowed earth has never been absent from any religious exercise of which I have yet seen or learned among the Indians. It represents the unappropriated life or power of the earth whence man may obtain life and sustenance. The square or oblong, with the four lines standing out, is invariably interpreted to mean the earth, or land, with the four winds blowing toward it. The cross, whether diagonal or upright, always symbolized the four winds or four quarters."

We do not know that the Lunar Zodiac was recognized by the wild tribes, or that the constellations were read by them, except the few that have been mentioned.* Orion was regarded as the great hunter, though, among the civilized tribes of the Southwest many of the constellations were known. Still, there was, everywhere, a reverence for the moon as the great luminary which regulated the seasons and divided the employments of the people; and we may suppose that on this account the moon was worshiped as a divinity.

*These engraved gorgets contain crosses, which are supposed to be symbols of the points of the compass. Others contain suastikas, which are supposed to be symbols of the revolution of the sky, though in India they are called "fire generators." Some of the crosses have four rings on each arm, and four rings between the ends of each arm, showing that the number "4" was sacred to the Mound Builders. The serpent symbols are generally divided into four parts, and have from four to eight rings in the head and body. There are also bird gorgets which contain four bird's heads emanating from a looped rectangular figure made by four parallel lines. Some of them have four perforations in the centre; others have a figure of the sun with eight rays, and in the centre of the sun the cross with four arms. These gorgets show that the sun and moon were connected in the symbolism, as do the scalloped-shell discs, which are so numerous in the stone graves. The form of the circles, or suns, carved upon the concave surface, is similar to the paintings on the high rocky cliffs on the banks of the Cumberland and Harpeth. One of these was found in a carefully constructed stone cist in which the face of the skeleton was looking toward the setting sun. It has a circle in the centre and four crescents emanating from the circle. Outside of this are

The same is true of the stars and heavenly bodies.

It seems certain constellations were also known to even the wild tribes and exactly the same constellations which are known to the civilized tribes of America, and very similar to those known to white men in this country, and to all the civilized nations of the earth, viz: the Great Bear, Pleiades, and the Dipper.

Mr. Tanner says, "The Indians had the names for the constellations, and these are very similar to those which prevail in the East. The constellation of Ursa Minor was called the Great Bear. The bear's head was represented by the stars in a triangle; the back of the animal by seven stars. The Fisher stars are the bright stars in Ursa Major; and even the sweating lodge, one of the poles of which is removed, was symbolized by the stars. The morning star and the north star, also had names. The aurora borealis was regarded as a symbol of the Goddess of War.

The Dakotas held, that the meteors were manitous. They called them the mysterious passing fires (Wahkendendas). The trailing light they believed to be the waiving hair flowing from the head. The Pleiades were known among all Indian tribes, and were believed to be animated spirits.

Cusick says, "That it is believed that the seasons were directed by the seven stars of the Pleiades."

Mrs. E. W. Emerson speaks of a figure with four sun-circles on the arms, and a hatchet in one hand, a triangular cap on the head, and seven balls above the cap. This represents Wahundedan, the Goddess of War of the Dakotas.

The tortoise was the symbol of the earth among the Iroquois, the eagle was the symbol of the sky, the serpent was the symbol of the water, the circle was the symbol of the sun.

It is related by Vimont, that the moon was the wife of the sun, of which Manbozho is pronounced as being an incarnation. "The various changes of the moon afford the Indian," says Mr. Tanner, "a method of measuring time, very definite as to periods, but variable as to names." The January moon was believed to give longevity to those born in that month.

There is evidence amongst the Mayas and tribes of the southwest that the months were divided into a definite number of

eight concentric circles, arranged in a band with dots between the circles. On the outside of the shell are fourteen discs which are supposed to represent the rays of the sun. Another scalloped-shell gorget has the centre sun and three crescents instead of four; and within the band outside, six concentric circles instead of eight, and thirteen scallops instead of fourteen.

Mr. Holmes says, that the general shape of the discs is such as to suggest a likeness to the sun. The well known fact that the district from which the gorgets came, was, at the time of discovery by the whites, inhabited by a race of Sun Worshipers, the Natchez, confirms the opinion that they were sacred to Sun Worship.

Another fact which gives plausibility to the theory that the Mound Builders were worshippers of the sun and moon, and the nature powers, is that spider gorgets have been found among the mounds of Missouri, in which there are spiders, the body marked with the symbol of the cross and suastika, the eight legs crossed with four lines, four bands on the tail, four rings surrounding the spider, and a zigzag line emanating from the mouth crossing the rings. Another spider has a cross on the back and what appears to be the Egyptian tau on the body. These gorgets were common near New Madrid, in Arkansas, showing that the symbolism of the Lunar Cult was wide-spread.

days, and that the year was made up of a definite number of months, and even weeks. The weeks were composed of thirteen days, or half of the month, possibly derived from making the division between the light of the moon and the dark of the moon. It is possible, however, that thirteen months, or thirteen moons constituted the yearly course, and that 4×13 made, even among these tribes, the sacred cycle of 52 years.

Mr. James Moony says, "Among the Cherokees, what may be classed as elemental gods are fire, water, and the sun, all of which are addressed under figurative names. The sun is called *Uni lanûhî*, "the apportioner," just as our word moon means, originally, "the measure." Indians and Aryans alike, having noticed how these great luminaries divide and measure day and night, summer and winter, with never varying regularity, have given to each a name which should indicate these characteristics. Missionaries have naturally, but incorrectly, assumed this apportioner of all things to be the suppositional "Great Spirit" of the Cherokees, and hence, the word is used in the Bible translation as synonymous with God. In ordinary conversation and in the lesser myths, the sun is called *Mûtă*. The sun is invoked chiefly by the ball-players, while the hunter prays to the fire; but every important ceremony, whether connected with medicine, love, hunting, or the ball-play, contains a prayer to the "Long Person," the formulistic name for water, or, more strictly speaking, for the river. The wind, the storm, the cloud, and the frost, are also invoked in different formulas.

This brings up the idea of the calendar and the system of nagualism, or magic, which prevailed in the southwest; for it seems that the superstition about the sun and moon led them to think that these luminaries directed all of their affairs in this life, and even controlled their destiny in the next life.

The hints, to be sure, are very vague, and we may be in danger of ascribing more significance to these symbols than really belongs to them. Still, it is not improbable that we should yet find that the various amulets and gorgets served the purpose of the sacred books, and the calendar stones; and that there was a similar system to that which prevailed among the civilized tribes. In order to understand this, we shall need to take up the myths of the aborigines.

It appears that the myths were often connected with the sacred ceremonies, and were explanatory of the beliefs and superstitions of the natives. They were a sacred inheritance. There were also, as we have said, many sacred books, or sacred records, which perpetuated the same beliefs. They all celebrated the course of nature, and so recognized in a manner, the calendar.

The Ojibway Indians, relates Mr. Copway, had three depositories for sacred records near the waters of Lake Superior. Ten

of the wisest and most venerable men of the nation dwelt near these, and were appointed guardians over them. Fifteen years intervened between the opening of these records. If any vacancies had been caused by death, others were chosen in the spring of the year; and in the month of August these were called to witness the ceremony. As they were opened, all the information respecting them was given. After this, the plates were closely examined, and if any had begun to decay, they were taken out, an exact copy was made and placed in its stead. The old one was divided equally among the wise men. It was very highly valued for being deposited; every fibre was sacred, and was considerably capable of endowing the possessor with wisdom. These records were written on slate-rock, copper, lead, and the bark of birch trees. It is claimed they contain the transcript of what the Great Spirit gave the Indian after the flood, which has been transmitted by the hands of wise men to other parts of the country ever since. There is a code of moral laws, which the Indian calls a "Path made by the Great Spirit."

They believe a long life will result from obedience thereto.

The records contain certain emblems, which transmit the ancient form of worship, and the rules for the dedication to the four spirits, who alone are to expound them. In them are represented how man lived before death entered the world; and the path he then followed marked out an example for those of the present time.

PICTURE WRITING IN POLYNESIA AND AMERICA.

We have given in the frontispiece specimens of the tablets which were found in the Easter Islands, and which are supposed to represent the picture-writing of the ancient races of Polynesia; also, a reproduction of the two parts of the Palenque Tablet, concerning which so much has been written, a page from the Dresden Codex, and a copy of the Samaritan Scroll, which is the most ancient of the Hebrew writings in existence. Our object is to draw a comparison between the different styles of picture-writing, and to illustrate the probable growth of the alphabet out of them. We would call attention to the various charts which have been published — the Ojibwa Chart and the Delaware Chart, or Red Score, — and the resemblance of these to the tablets found in the Easter Islands, and the great contrast between them all and the characters in the Palenque Tablet and in the Codex.

The history of the Tablets has been written by several persons, with attempts at interpretation and translation, none of which are entirely satisfactory, and yet are suggestive as to the growth and possible degeneracy of alphabetic writing. Among them are Prof. De Laconperie, the learned Oriental scholar, and Dr.

Carroll, of Sydney, Australia, and Mr. Thompson, the paymaster of the steamer Mohican, of the U. S. navy, published in the Smithsonian Report for 1889.*

The following is an account by Prof. De Laconperie :

In the Easter Island, or Vaihu, some fourteen inscriptions have been found incised on wooden boards, perhaps of driftwood. The characters are peculiar. Most of them display strange shapes, in which, with a little imagination, forms of men, fishes, trees, birds, and many other things have been fancied. A curious characteristic is that the upper part of the signs are shaped somewhat like the head of the heron or albatross. A pictorial tendency is obvious in all of these. Some persons in Europe have taken them for hieroglyphics, and have ventured to find a connection with the flora and fauna of the island. The knowledge of this writing is now lost, and it is not sure that the few priests and other men of the last generation, who boasted of being able to read them, could do so thoroughly. Anyhow, in 1770, some chiefs were still able to write down their names on a deed of gift, when the island was taken in the name of Carlos III, of Spain.

In examining carefully the characters, I was struck by the forked heads of many of them, which reminded me of the forked matras of the Vengi-Châlukya inscriptions. A closer comparison with Plates I to VIII of the Elements of South Indian Paleography,† soon showed me that I was on the right track, and a further study of the Vaihu characters, and their analysis by comparing the small differences (vocalic notation) existing between several of them, convinced me that they are nothing else than a decayed form of the above writing of Southern India returning to the hieroglyphic stage. With this clue, the inscriptions of Easter Island are no more a sealed text. They can easily be read after a little training. Their language is Polynesian, and I can say that the vocabulary of the Samoan dialect has proved very useful to me for the purpose.

On the other hand, Dr. Carroll says :

The most positive proof that the inscriptions were not Polynesian work is furnished by the records of several expeditions and visits of persons, in which it was found not possible to get rational translations of what these inscriptions were about. But it is shown that each native gave a different interpretation of *what he thought, but did not know*.

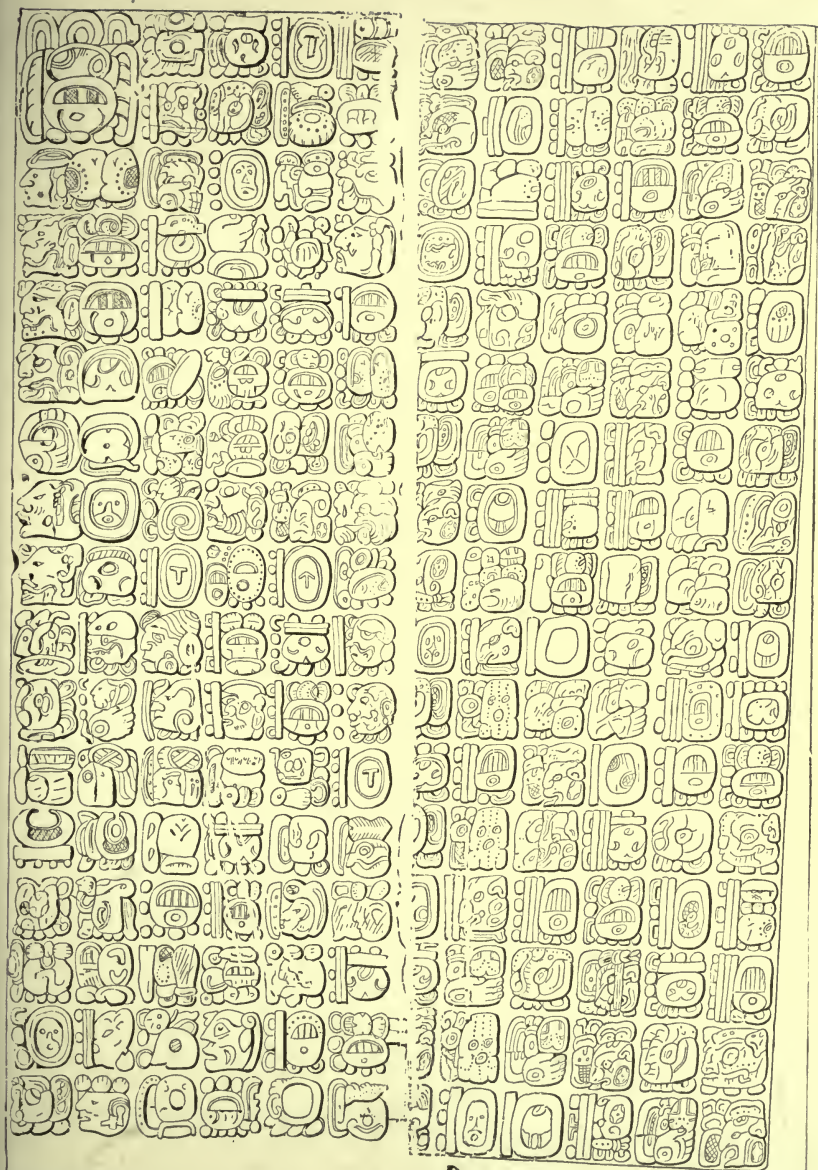
No translation, purporting to be correctly given by the natives, is furnished up to the present time, though numerous guessings are given by various persons.

I learned that in the so-called new continent of America — from the north, in Alaska and Canada, to Mexico and Ecuador and Peru, many ancient peoples use hieroglyphics and phonetic (?), as well as ideographic, symbolic and conventionally drawn figures as records of their mythologies, genealogies, traditions, histories, poems, and other matters and things. These American writings contained similar forms for similar ideas, and were used upon the same plan as those in the old continent. There was also found a conventional drawing of human heads and figures, as well as of animals, which were intended to conceal from the common people what the chiefs, priests, scribes, or others instructed therein, would readily recognize and understand.

It became clear that the Easter Island inscriptions were engraved on the tablets by scribes, who had learned the characters and methods of writing from those who knew how they were used in America, and especially in South-West America. The plan upon which the scribes worked was to engrave the conventional figure of the person, or his tribal *totemic sign*, — *e. g.*, an eagle-headed figure for those of the eagle tribes, an ax for the Chambo-razos, the old copper ax being called *chambo* in one dialect, and *chimpo* in another.

* The reproductions of the same are found in the Album, published by A. B. Meyer, in Dresden, in the Smithsonian Report for 1889, along with a large number of plates, representing the ancient stone houses, images and rock inscriptions. In this report eight tablets are represented — two plates for a tablet, one for each side. It is also found in the Journal of the Polynesian Society, Vol. I, No. 4.

† A. C. Burnell, Elements of South India Paleography.



They also used certain complex figures which had a value of *sound* for *reading*, and was equivalent to the verb, noun, adjective, or other part of speech. The shields are important, as are the attached feathers, and the chevrons, or bands, upon the shields; for they indicate the tribes, family, or nations, all widely known, and have been used by successive generations from remote times, and show the clans about which the scribe was writing. It will thus be perceived that, using the knowledge I have acquired of the American mode of forming and using their hieroglyphics, and finding that the Easter Island inscriptions were derived from those of America, adding these together in the manner indicated, I let them tell their own story in the language they are found to be written in, and then simply translate this into English.*

The great fault of the latter writer is that he ascribes a phonetic character to the American hieroglyphics, and undertakes to make this a key to the inscriptions, which, he thinks, were borrowed from America; whereas, the majority of Americanists make them only ideographic.

The third writer comes nearer to the truth when he makes them expressive of the myths and legends, though he calls the inscriptions a "written language."

Mr. Thomson says:

The existence of the incised tablets was not known until the missionaries settled upon the island. Numerous specimens were found in the possession of the natives, but no especial attention appears to have been directed towards them. Several persons belonging to vessels that were wrecked at Easter Island report having seen these tablets, but they were so highly prized by the natives that they could not be induced to part with them. The three hundred islanders who emigrated to Tahiti had in their possession a number of these tablets.

The Chilian corvette O'Higgins visited Easter Island in January, 1870, and Captain Gana secured three tablets, two of which are on deposit in the National Museum, at Santiago de Chili.

Seven of these tablets are now in the possession of Tepano Jansser, Bishop of Axieri, all in excellent state of preservation.

The strongest thing in favor of Mr. Thompson's translation is that a person was found who pretended to interpret them. He must, however, acknowledge that the translations of the various tablets differ from one another so much, while the character of the tablets themselves remain uniform; so that we seriously doubt the correctness of the versions gained from the native, who was under the influence of liquor.

This, however, does not detract from the value of the tablets as a means of comparison.

The following are the points of contrast and resemblance between the different tablets and charts found in America and those on the Easter Islands:

1. The hieroglyphics are made up altogether of human faces, hands, conventional figures, and but very few animal figures contained in them. They cannot be regarded either as totemic nor as phonetic, but must be, as Dr. Phillip Valentine says, ideographic, made up of portraits mainly.†

* Dr. Valentine calls them tachygraphs, abbreviated, degenerated images, the prototype of which will be found detected in sculpture as distinct objects. He thinks them to be of a ritual nature. The method of recording on paper was not alphabetic, syllabic, or intermixed, but object or picture-writing.

(See Proceedings of Am. Antiq. Soc'y., Vol. IX, Part No. 3, Page 429.)

† (See Am. Antiq. Vol. XVII, No. 2, p. 85. Chart of the Mide Song.)

2. The arrangement of the glyphs appear to be in columns, which are to be read perpendicularly from the top down. The arrangement of the tablets is in horizontal lines, the reading from left to right, and from below upward, but, by turning the tablets around, the symbols on each line are alternately reversed; those on the first stand upright, and those on the next line are upside down, and so on by regular alternation.

This unique plan makes it necessary for the reader to turn the tablet and change its position at the end of every line; by this means the characters will be found to follow in regular procession. The reading should commence at the lower left hand corner on the particular side that will bring the figures erect, and followed as the characters face in the procession, turning the tablet at the end of each line as indicated. The *Bostrophedon* method is supposed to have been adopted, in order to avoid the possibility of missing a line of hieroglyphics.

The writing is composed of pictorial symbols, carrying their signification in the image they represent.

In the Red Score the characters are in columns, and are read from top to bottom. There is no uniformity in the chart, but in the Palenque Tablets, and all those from Easter Islands, uniformity is complete.

In the Ojibwa charts the arrangement is in lines, but the reading is from the right to the left, and from below upward, back and forth. In others the reading is from left to right and down the page.

3. The connection of the figures, totems, and other symbols with one another is essential for reading, and shows one stage of picture-writing. In the Palenque Tablet the conventional symbols are blended and the combination is varied. This forms a great contrast.

"The native traditions in regard to the incised tablets simply assert that Hotu-Matua, the first king, possessed the knowledge of this written language, and brought with him to the island sixty-seven tablets, containing allegories, traditions, genealogical tables, and proverbs relating to the land from which he had migrated."

"A knowledge of the written characters was confined to the royal family, the chiefs of the six districts into which the island was divided, sons of those chiefs, and certain priests, or teachers, but the people were assembled at Anekena Bay, once each year, to hear all of the tablets read. The Feast of the Tablets was regarded as their most important fête day, and not even war was allowed to interfere with it."

"The ability to read the characters may have continued until 1864, when the Peruvian slavers captured a large number of the inhabitants, and among those kidnapped were all of the officials and persons in authority."

"A man, called Ure Vaeiko, one of the patriarchs of the island, professes to have been under instructions in the art of hieroglyphic reading at the time of the Peruvian visit, and claims to understand most of the characters. This man was interviewed, and after considerable management and the use of stimulants, was induced to tell the story of the tablets, which were written down by Mr. Salmon, and afterward were translated into English."

"A casual glance at the Easter Island tablets is sufficient."

4. The mythological character of the tablets is manifest. The myth-bearers are such as would be natural to the Easter Islands, and would apply to the divinities. The myth bearers of the Ojibwa charts are full of allusions to the animal divinities and nature powers; those of the Navajoe sand paintings are full of mountain divinities and symbols of the sky; those of the Palenque Tablets are mainly portraits, with a few conventional figures of the nature powers.

5. The Mnemonic character of the tablets: The figures were known to certain trained readers, possibly of the royal family, very much as the symbols of the charts were known to the medicine men, and the glyphs in the Palenque Tablets and pictures in the Codices were known to the priests. These are mere hints, and yet they are worth following up.

PICTURE WRITING IN POLYNESIA.

This tableau tells its own story to the eye. It represents a sacrificial scene. Two persons, evidently priests, are seen with their heads raised and their eyes directed toward a bird perched on the top of a cross-like framework. The bird can easily be recognized, being the sacred bird *Suetzal* (*trogon resplendens*). His wings are slightly raised, his legs in attitude of walking, his head and neck bent forward. The framework represents the *yakchi*, the sacred tree of life (L. P. 200), and is rooted upon what seems to be a monstrous skull. On the hands and outstretched arms of the elder priest lies the figure of an idol, the god *Chac* (L. P. 220), the protector of the fields and harvests. The junior assistant holds in his hand a stalk of the maize plant, its root and its waving leaves conventionally, but clearly, expressed. The tapestry of the background is emblazoned with short rows of day-symbols and intermixed with clasps, in which pairs of maize leaves, as if moved by a breeze, are festooned. Mr. Francis Parry, in one of his last pamphlets, has pointed out, with evident correctness, that the salient emblematic features of this background are the green leaves of the maize; all of them tending to glorify fecundity and the worship of the beautiful god *Chac*.

These squares exhibit a series of human profiles. To judge from their diversified physiognomies, we take them to be portraits, and, from their location at the head of the inscription, to be portraits of prominent men. Later examination will prove them to be portraits of certain historic priests, and the fifth of the series, the emblematic image of one of them.

BOOK REVIEWS.

The Creek War of 1813 and 1814. By H. S. Halbert and T. H. Ball, Chicago, Illinois: Donohue & Henneberry. Montgomery, Alabama: White, Woodruff and Fowler. 1895.

The Creek War was to the southern states—Alabama and Georgia—what the Black Hawk War was to the northern states—Illinois and Wisconsin—both wars were disastrous to the Indians, and prepared the way for the full possession of their territory by the whites. The first occurred in the year 1812, the year of the last struggle between the United States and Great Britain; though there is no evidence that British influence affected it. The last occurred in 1832, a time when this country was at peace with Great Britain; but there is no doubt that Black Hawk was connected with the so-called “British Band.”

The Creek War began with a battle at Burnt Corn, a battle in which the whites were defeated, and brought upon themselves great ridicule because of their unwise attack and senseless defeat, just as the Black Hawk War began with a skirmish at Stillman Valley, a skirmish which reflected no credit upon the white settlers.

The attack of the Indians upon Fort Mims, which is called a massacre, was followed by the Kimbell-James massacre, and that by the fight at Sinquefield. The last proving to be as great a calamity to the Creek Indians as the battle of Wisconsin Heights was to the northern Indians.

These two events in our national history have been dwelt upon by traditions, and the oldest inhabitants have continued to tell various stories of them. A few have undertaken to locate the battle fields and identify the incidents, and yet there are but few. The majority of the people, both north and south, know that there was a Creek War and a Black Hawk War, but they get the scenes strangely misplaced, and locate the incidents at any place which fancy may dictate.

The authors of this book have undertaken to carefully locate the events of the Creek War, and identify the exact spots where the forts were located and the battles were fought. One of them, Rev. T. H. Ball, makes a special display of his efforts to be accurate, and criticises the accounts which have been written by other well known historians—such as Gen. J. F. H. Claiborne and Albert James Pickett. The other, who is our friend and correspondent, Mr. H. S. Halbert, is just as accurate and far more interesting, and at the same time is very modest in his estimates of his own powers. His accounts of the different battles—that at Burnt Corn, at Fort Sinquefield, and of the Holy Ground, are very graphic, and deserve to be republished as monograms.

He spent a portion of his early manhood in Indian campaigns on the western frontier, where he became familiar with the sight of the wild warrior with his bow and quiver, his paint and feathers ; and there he conceived an abiding interest in the strange history and destiny of the American Indians. He has also been not a little among the civilized tribes of the Indian Territory. After four years of service in the Confederate Army, he was for a number of years engaged in teaching in Texas, Mississippi and Alabama. While pursuing his profession in the two latter states, he devoted much of his leisure to historical researches. He visited the homes and interviewed some surviving soldiers and contemporaries of the Creek War of 1813, and noted down their varied recollections, thereby collecting much new material for the history of the war. He was especially fortunate in securing from these aged survivors a full account of the attack on Fort Sinquefield, of which only a meagre sketch is recorded in the histories of Meek and Pickett.

Turning On The Light. A dispassionate survey of President Buchanan's Administration, from 1860 to its close, including a biographical sketch of the author ; eight letters from Mr. Buchanan never before published, and numerous miscellaneous articles. By Horatio King, Ex-Postmaster General of the U. S.: Philadelphia J. B. Lippincott Company. 1895.

The title of this book is misleading, for one can hardly tell from it whether it is a Theological Treatise, calculated to throw light on some interesting but knotty question in Biblical criticism, or a literary work calculated to throw light on the great problem as to who the author of Shakespeare was, or an Archaeological Treatise on the origin of the alphabet or of certain symbols, or a Treatise on Finances calculated to clear up the silver question or the tariff. Most readers will probably be disappointed when they find that the book is a review of the administration of James Buchanan, the old bachelor president who preceded Abraham Lincoln in the White House and in the administration of national affairs. The contrast between these two presidents does not grow less by the reading of the book of 419 pages. In the language of Gen. Crawford, "Buchanan's overwhelming desire for peace and his hope to keep the border states, amounted to a timidity which 'wholly incapacitated him from action,'" When history shall come to pen the record of his career, he will not be judged for what he did, but from what his great opportunities and grave responsibilities he utterly failed to do. That is the sentence which has already been pronounced, and no amount of writing or arguing by his friends, whether they were, at the time, loyal or disloyal to the administration which followed, will reverse the decision. The portrait and biographical sketch of Mr. Horatio King, who was appointed by President Pierce as First Assistant Postmaster General under President Buchanan, and who was afterwards Secretary of the National Monument Society, precede the volume itself, and are attractive. Mr. King was, undoubtedly, loyal to the Government, and perhaps understood his friend, James Buchanan, better than the people of the north did. But the results were the same, whatever reasons there were in the mind of the president at the time. The book is very neatly printed, and is elegant in its style, as nearly all of Lippincott's books are.

Certain River Mounds of Duval County, Florida. Two Sand Mounds on Murphy Island, Florida. Certain Sand Mounds of the Ocklawaha River, Florida. By Clarence B. Moore. From Advance Sheets of the Journal of the Academy of Natural Science, of Philadelphia. Vol. X, Philadelphia, 1895. Philadelphia: The Levytype Company, 1895.

This elegant volume, containing 106 pages folio, and 16 pages of plates, and 2 of index, is a valuable contribution to the archæology of America. It is the third or fourth volume which has been published under the auspices of the Academy of Natural Sciences, at Philadelphia, and constitutes the advance sheets of the Journal of the Academy, Vol. X. It contains 91 figures or wood cuts of relics, which were taken out of the river mounds in Duval County, and the sand mounds of Murphy Island and Ocklawaha River, Florida. These relics consist of the following: mussel shells used as knives and chisels; pottery vessels of various patterns, ornamented and unornamented, large and small; arrow and lance points; spade-shaped implements; boat-shaped pendants; perforated tablets and maces; tobacco pipes of stone and earthenware; bone pins; celts of felsite; beads of shell and earthenware; gorgets of stone, properly, tubes; sheets of mica; ornaments of wood overlaid with sheet copper; lance heads of copper; crescents of copper; an ornament resembling the sheath of a spear, of copper; ornaments of sheet copper resembling a mask; ornaments of sheet copper with discs in the centre, and with dots surrounding the discs; a bone pin with cross-hatchings; polished hatchets, celts, or chisels, 13 inches long; small celts—one with a double groove, two with a flaring blade; bear's tooth, and a number of pendants; these pendants are made of shell, igneous rock, fossil bone, chert, steatite, quartz-crystal, earthenware, banded slate, and diorite; they have a great variety of shapes; some of them perforated and some with a small groove around the top; the most of them resembling plumb-bobs; some of them are short, pear-shaped.

The pottery vessels are interesting specimens and are peculiar to this region. Some of them are large and round like a pumpkin; others, flat like a shell; others deep and long like a vase, or in tubes like a lily; some of them resemble gourds; others like a bake-kettle, with the convex lid; others like large bowls, and a few with legs like pots; others with flat and square edges, resembling the melates of the Pueblos and Cliff Dwellers. One is ornamented with an oak leaf; another with an embossed figure; others with concentric circles and crosses; others with triangular patterns; others with the Greek fret, with cross-hatchings; others covered with square checks. Scarcely any two vessels being alike. One has a human figure delineated on it; another, an animal head resembling a human face.

The pottery is unlike that which is found anywhere else, and it shows that the people were unique in their ideas of pottery-making. The same may be said of the copper ornaments. There are some stone implements which resemble those found in the stone graves, especially the spade-shaped implement; the copper sheath resembles that which is pronounced to be the "scabbard of a sword."

There is no evidence, whatever, given by these relics, which would prove contact with the white man. The only thing which would look that way is the fact that so much sheet copper has been found. Some of the sheets being riveted and the edges bent over in an artistic manner. There are no relics which give the impression of having been stamped, or run into a mould, or

made by a machine, as we maintain the relics of the Hopewell Group do. Every article has a shape of its own, and there are no repetitions as are found in the relics in the Field Museum. This is very important, for the copper sheets from the mounds in Florida previously exhumed, have been tested and proved to contain alloy; and so are pronounced genuinely prehistoric.

We regard Mr. Moore's careful exploration as truly scientific, for he has been very careful in describing the exact location of each article, even when it took a large number of men to remove the sand which would inevitably slide in.

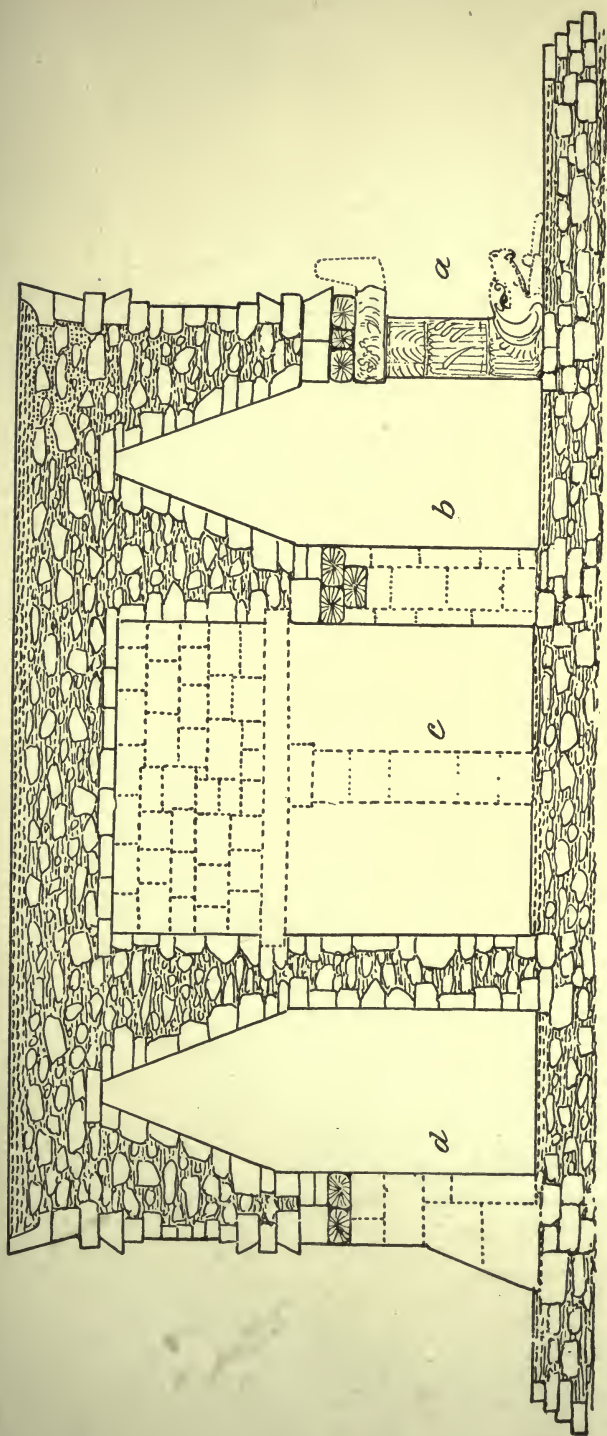
The work has been so carefully done that it would seem as if there were no doubt about the copper relics found here being prehistoric; and the fact there are no symbols which could in any way be compared to the symbols which are common in Europe—the cross, suastika, clover-leaf, and rosettes found on the copper relics—confirms the supposition. Gold ornaments have, indeed, been found in Florida, which Dr. Chas. Rau and Mr. A. E. Douglass have pronounced post-Columbian, maintaining that the gold was secured from wrecked vessels. This may be so, but it does not argue that all sheet copper was rolled in a mill and brought to America. We have seen specimens of sheet copper which had the stamp of the mill on them, and where they had lines like those found in copper boilers. Ancient copper has no such marks. It is difficult to distinguish it from that which has been hammered; but the patterns and the shapes will always impress the eye; and one who has been trained by experience and observation can tell the difference between prehistoric and proto-historic relics without testing the copper by assaying. Still, the character of the copper is “*articulostans*,” and we commend Mr. Moore's method of applying tests to the copper relics after he has carefully noted their situation as related to the archaeological horizon.

It was formerly the opinion, that different classes of Mound Builders resorted to the seashore, at certain periods, and lived on the shell-fish for a time, and would then return. This would naturally result in a great mixture of relics; but so far as this book is concerned, there is nothing to prove the supposition, as the pottery is unique. The stone relics which resemble those in the stone graves may have been gathered by aboriginal trade.

This work contains some 140 pages, and has 40 text illustrations and 18 plates; the latter include two panoramic views and two maps. It is the first of two parts which constitute the report of the author on a voyage to Mexico in the winter of 1894-5. This paper is No. 9 of the Museum Publications and No. 1 of the Anthropologic Series. It is very well printed, the half-tone illustrations presenting a most attractive appearance. The size is octavo, and it is issued in paper covers.

In the introductory pages we have a brief review of the geological history of Yucatan, and of the people and their strange culture. The fossil remains plainly show that the limestone plains have risen from the sea bed during very recent geologic times, and the surface of the country is described as hardly having changed its topography since its emergence from the water. The waters, charged with vegetable acids, have perforated the porous limestone, and find their way to the sea in underground channels, so that in a season's travel not a drop of running water is seen on the surface. The necessary supply of water is obtained from deep pools, natural cisterns or caverns.

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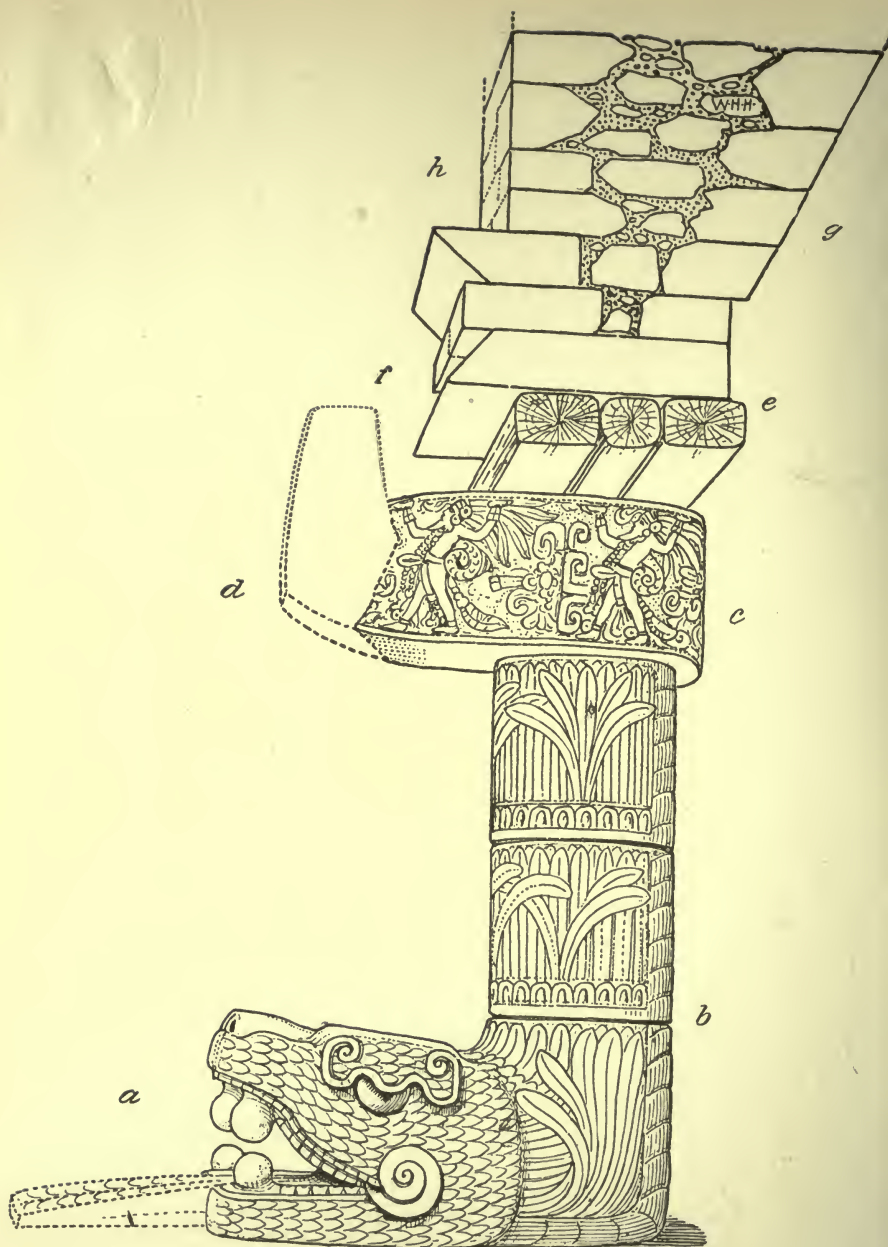


FROM NO. 1 ANTHROPOLOGICAL SERIES

FIELD COLUMBIAN MUSEUM

SECTION OF THE TEMPLE CALLED EL CASTILLO, FROM NORTH TO SOUTH.

- a. Serpent column at north or main entrance.
- b. Vestibule with plastered doorway leading to the sanctuary.
- c. Sanctuary; square column, long wood beam and masonry of vault slope in dotted lines.
- d. Outer gallery with doorway at left.



THE FEATHERED-SERPENT COLUMN OF CHICHEN-ITZA

Restoration made from mutilated examples.

Two of these columns are placed in each principal portal, facing outward. The end of the tongue extends forward on the narrow terrace nearly to the head of the stairway.

- a. Base (head of serpent) resting on temple floor.
- b. Shaft (body of serpent) with feather decoration.
- c. Capital (tail of serpent) with atlantean figures in relief supporting the lintel.
- d. Tail of Serpent, broken off in principal examples, but originally, probably turned up at the point and tipped with sculptured rattles.
- e. Three linted timbers cut midway in their length.
- f. Three-membered molding—archaic cornice—about midway in height of building.
- g. Soffit or incline of arch of vestibule.
- h. Decorated zone of entablature, 56 inches wide to upper moldings.

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No. 3.

ARCHÆOLOGICAL STUDIES AMONG THE ANCIENT
CITIES OF MEXICO.

BY W. H. HOLMES.

Mr. W. H. Holmes, the Curator of the Department of Anthropology in the Field Columbian Museum, in 1895, accompanied Mr. A. V. Armour, in his yacht *Ituna*, to various ports on the Gulf Coast of Mexico, and made several trips to the interior for the purpose of examining the ancient cities situated there.

He embodied the results of his observations in an interesting and valuable report accompanied by a large number of excellent drawings and photographic views, and the report has been published by the Museum as No. 1 of the Anthropological series. The second number will include descriptions of Palenque, Mitha, Monte Alban and San Juan Teotihuacan, and embody five panoramic views.

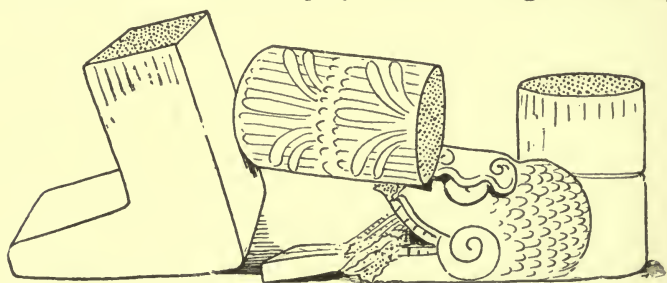
This volume purports to be only a sketch of the various ruined cities and sites visited, but goes into considerable detail, in several instances, and especially in treating of the various ruins encountered on the islands of the Eastern Coast of Yucatan, and of the monuments of Chichen-Itza and Uxmal. Though many of the sites have been visited before, some are wholly new, and all are presented in such a way as to give new impressions of the remarkable architectural remains.

The following is a summary prepared by himself, along with a few outlines to represent the peculiar features of the architecture of the region.—[THE EDITOR.]

The people were of tribes represented in the country to-day by 500,000 Indians of more or less pure blood. They were well advanced in many branches of culture and stood at the head of the American nations in the march toward civilization. They were recent comers to the peninsula, and must have had their origin in the West or Northwest. They are best represented by their architectural remains, which exhibit many unique and interesting features, all probably of native development, though in cases strongly suggesting foreign models.

The construction of the buildings was somewhat minutely studied and their simple plan, massive walls and ponderous roofs are thought to indicate the efforts of beginners in the art of stone construction. The chambers are all vaulted, the arch being of two varieties, one employing the horizontal span principle and the other the lean-to, though the latter is used always and only as an auxiliary to the former. The prevailing form is based on the horizontal span, employing not single long slabs, reaching from wall to wall, but a series of short slabs so placed as to bridge the void by degrees. A course of stones is laid along the top of each of the opposing walls, projecting inward a little, a second course is laid in like manner, and others follow until by a series of offsets the sides have approached to within a foot or two, when a course of large well-squared slabs is laid across, completing the span.

In examples employing the lean-to principle, the construction is the same up to the point of connecting the closely approximate walls. Instead of laying a course of flat cap-stones across, two courses were employed, set on edge on the upper



Sketch of Fallen Feather-Serpent Column.

Facade of temple of the tables, showing point of reptiles tail turned upward.

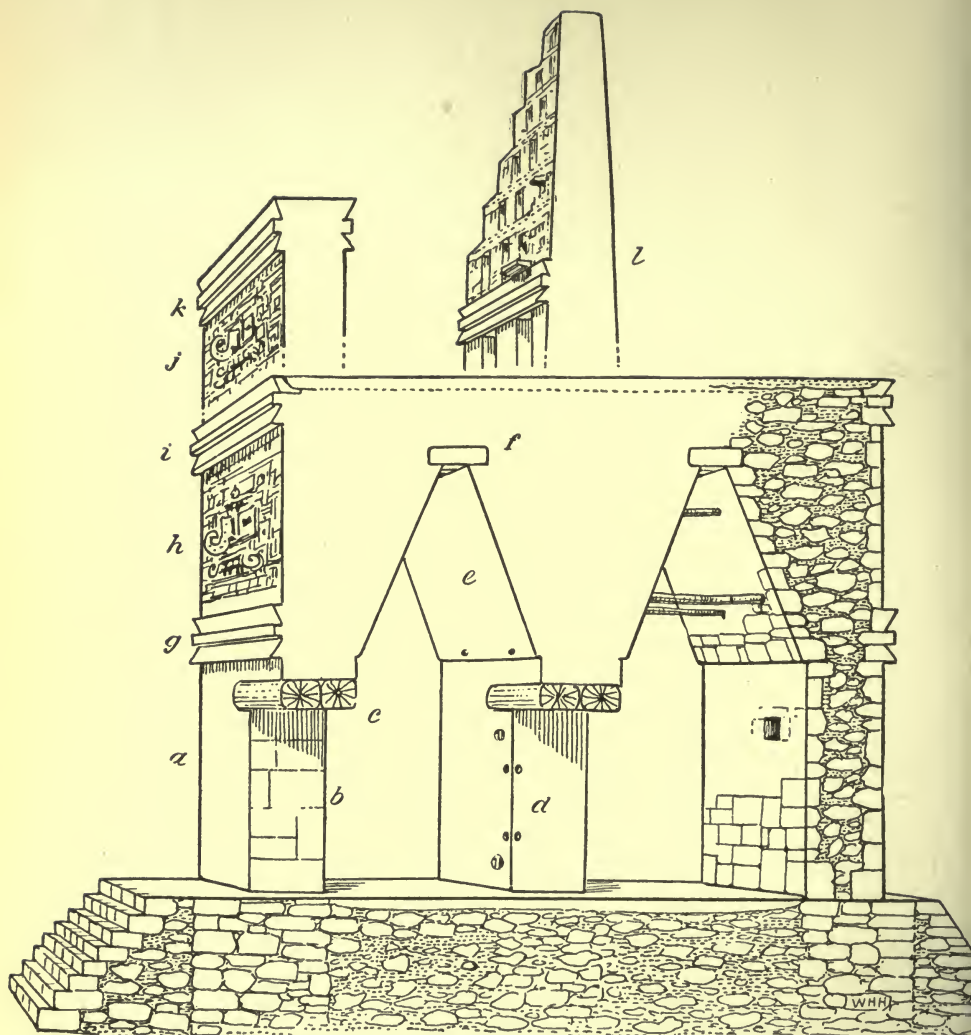
courses of the walls and inclined together at the top, continuing the pitch of the walls and forming the true cuneiform arch. The object of the offsetting is, of course, to reduce the span of the void, thus permitting the use of ceiling stones of small size instead of large and long stones which were hard to obtain and easily broken, or beams of wood which soon decayed. These arches really represent the emancipation of the Maya builder from the thralldom of the wooden beam.

The walls are very massive and it is computed that often two-thirds or more of the space occupied by a building is solid masonry. The bearing is composed of broken stone set in mortar of excellent quality, and the facing consists of hewn blocks neatly laid, but without apparent appreciation of the importance of breaking joints systematically, and of transverse binding. Nearly all surfaces have been finished in washes of color. The floors and roofs are of concrete, and the roof-combs are high walls of masonry, built exclusively for ornament and always richly decorated.

The function of the buildings is manifest, for temples are distinguished from other structures which are mere assemblages of many apartments under one roof. The temple has a specialized plan, the most usual form having two chambers, one behind the other. The first serves as a vestibule to the second which has no light save from the front door, and is considered to be the Sanctuary, as it was undoubtedly the sacred chamber where idols were kept or the most sacred rites performed. The more highly specialized examples have additional apartments at the sides of or behind the Sanctuary; but these never detract from the isolation and somber privacy of the sacred chamber.

The panorama of Chichen-Itza includes a much more extensive cluster of crumbling buildings, which cover perhaps half a square mile of the jungle covered plain. In the foreground is the group known as the Nunnery or Palace, with its annexed buildings, seen from the rear. To the right is the low box-like building called Akabtzib, and over and beyond the Nunnery come first the strange round building called the Caracol because of its winding stairway; the square building called the Red House; the Tennis Court with its great parallel walls and temples; the lofty pyramid temple called El Castillo, and to the right of the latter a wonderful group of pyramids, ridges, mounds and foundations of buildings called the Group of the Columns, because of the almost numberless remnants of stone columns, round and square, that cover the ground plans of some of the structures. Other demolished temples are scattered about, but the most striking features of the site are the two great cenotes, or natural cisterns. The Cenote Grande in the center of the picture is some 70 feet deep and nearly 200 feet in diameter. The basin is approximately circular and has nearly vertical walls, save at one side where the slope has been reduced by erosion so that descent can be made to the edge of the pool of water resting calmly at the base. The other, the Sacred Cenote, is farther away in the middle distance, and is more regular in form and more interesting, because tradition says that here victims and treasure were thrown in to appease the insatiable barbarian gods. These Cenotes are merely great sinks into subterranean waterways, much rounded by crumbling of the limestone walls. They are blocked up by debris so that the water is held in a seepage basin. The city is in the center of a great plain, which extends to the horizon on all sides, unbroken save by the billowy surface of the dwarfish forest.

The many chambered buildings could hardly have been other than dwellings for communities, sacred or otherwise, as the rooms are small, plain and rarely connected save in pairs. Those constructions represented by two great parallel walls were no doubt gaming courts, and the unique double turretted tower of Chichen-Itza was a watch tower and citadel. The latter building is here, for the first time, fully analyzed. It is shown that it was composed of two turrets, the larger 40 feet in



FROM NO. 1 ANTHROPOLOGICAL SERIES.

FIELD COLUMBIAN MUSE.

TRANSVERSE SECTION OF AN ORDINARY YUCATEC BUILDING.

- The upper part of the pyramid is shown with the stairway at the left.
- a. Lower wall-zone pierced by a plain doorway.
 - b. Doorway showing squared and dressed stones of jamb.
 - c. Wooden lintels cut midway in length.
 - d. Doorway connecting front with back chamber and showing position of cord holders.
 - e. Inner face of arch dressed with the slope.
 - f. Ceiling, or cap-stones of arch.
 - g. Lower line of mouldings, a survival of the archaic cornice.
 - h. Decorated entablature zone.
 - i. Upper mouldings and coping.
 - j.k. False front with decorations, (occasionally added.)
 - l. Roof-crest with decorations, (occasionally added.)

diameter and some 28 feet in height, supporting the smaller about 20 feet in diameter and perhaps 5 feet in height. The walls were not sloping, as heretofore supposed, but vertical, and the profile was not unlike that of the ordinary buildings of the same locality. A graphic section makes the many peculiarities of the structure quite clear.

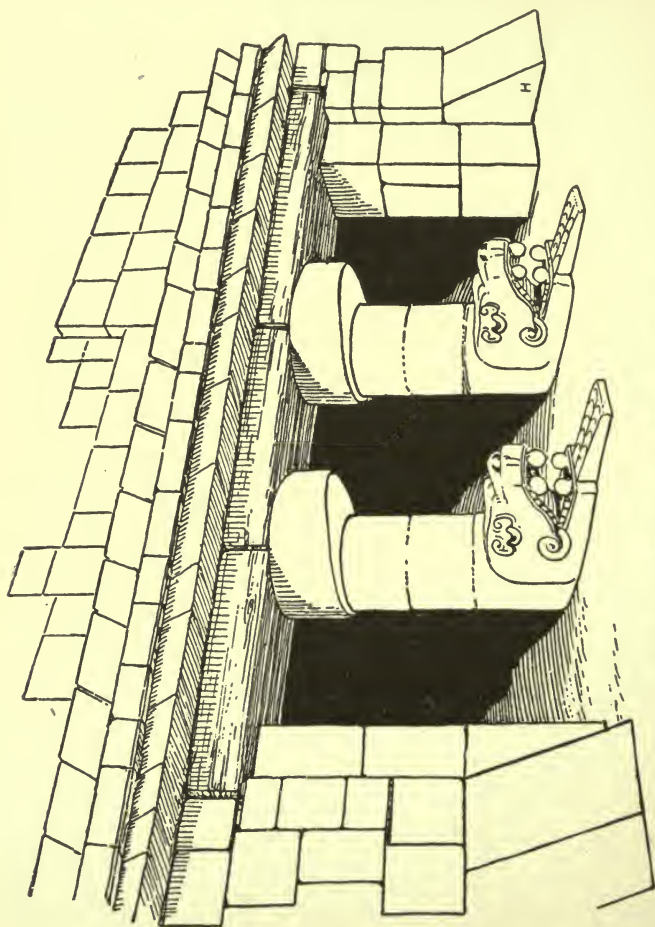
The doorways, columns, roof-combs and other features of the constructions are presented in considerable detail, and the remarkable feathered serpent column—illustrated in the frontispiece—is taken as an index of the advance in taste, as well as in construction, of these ancient builders. It has been learned, through Mr. Alfred P. Maudslay, who conducted extensive excavations at Chichen, that the tail of the serpent, in all or nearly all of these columns, bent outward under the lintel and then upward at the point, and the illustration, reproduced in Fig. 2, has been altered to indicate this. This feature is correctly shown in Fig. 3, which represents a round column with squarish cap, the other end being extended and bent upward forming the tip of the serpent's tail.

The use of the serpent in architectural display was prevalent in all the Maya cities. In the shape of columns it guards the portals of the temples, and its body forms the long, steep balustrades that border the great stairways. In approaching the temple of El Castillo, at Chichen, from the north, the visitor passes between two great serpents' heads extended on the ground at the base of the stairway, climbs the 90 steps between the balustrade bodies, and enters the portal between a second pair of ferocious looking reptiles that guard the way to the sanctuary. At Chichen, the serpent also enters into many of the Mosaic relief designs with which the facades are embellished, and into the mural reliefs of the sanctuary interiors. In Uxmal, it is interwoven with the elaborate ornaments of the facades, forming most intricate and tasteful designs. In Palenque, and others of the more southern cities, this symbol is of even more frequent occurrence and appears in some form in nearly all the sculptured and plastic decorations of the wonderful temples.

The serpent is always conventionally treated and the style of convention varies greatly with the place, and in the same with the manner of use. It is very generally furnished with feathers—always elegantly treated—and was, no doubt, the Feathered Serpent God of the Maya race, corresponding to the Quetzalcoatl of the Nahua mythology and art.

The greatest marvel of these monuments is, perhaps, the system of mural decoration, a large part of the wall space being covered with sculptures. A multitude of symbolic devices and designs have been worked out in high relief by setting separate sculptured blocks into the face of the wall, forming a rich mosaic. It is impossible to say of the ornamental art of any primitive people just what causes have operated to bring it into existence, or what ideas underlie its varied phenomena. We discover, in the non-essential elaborations of these ancient

buildings, numerous elements surely traceable to constructive sources, but we further perceive that most of the motives employed in embellishment have their origin in religion; that their use in art was first significant and second æsthetic. It is almost certain, that every life form that entered into the embellishment of temples and palaces was employed because it occupied some place in the mythologic symbolism of the builders. The serpent, the tiger, the turtle, the bird, the monster,



PORTAL OF MAYAN TEMPLE. EL CASTILLO.

(Partial Restoration.)

The opening is twenty (20) feet wide and nearly eight (8) feet high, and is divided by two serpent columns which sustain the wooden lintels and entablature. The tip of the tail should probably turn up at the point.

represent mythic conceptions. Men were deities or their representatives, or were depicted in scenes that relate to rites or duties of a religious nature. It is further believed, that very many of the purely conventional designs, the scrolls, the frets, the meanders and the zigzags had meanings, hidden to the uninitiated, coming down from their less conventional phases of development. It is pretty certain that even in the latest

periods of Maya history the various motives employed in decoration were not only significant, but that they were not used out of their traditional or appropriate associations, and when we see a life form or even a non-graphic device associated with a given structure we may fairly assume that it has, or had, a special significance and function in that connection.

All the sculptor's work is crude as compared with civilized art, but it is virile and, apparently full of promise of higher achievement. Portrait sculpture was probably not practiced, or if attempted the form of expression was so conventional as to rob the representation of marked individuality. Sculpture found its subjects almost wholly within the animal kingdom, and, though we observe that species was portrayed with some degree of truth, it is apparent that with creatures as with human beings, mythic characters were of more importance to the sculptor than the realistic.

Graphic art seems to have covered pretty much the whole field of nature generally with rude vigor. Extensive subjects in bright colors, covering the walls of some of the chambers of Chichen include village scenes and battle pieces strongly suggesting the work in some of the ancient manuscripts. There is a lack of perspective, and a mixing up of sizes, and the general style of presentation is suggestive of that of the ancient Egyptians.

We see in the panoramic views given how the great groups of remains are spread out upon the forest covered plains of Yucatan. The foliage has been omitted to such an extent that even the foundation terraces are distinctly outlined. Uxmal is seen from the north, and in the foreground we look down upon the quadrangle of the Nunnery, so called, with its four long, low richly decorated buildings facing a square court. On the left, near at hand, is the unique round-ended pyramid crowned by the two buildings known as the House of the Magician and reached by steep, lofty flights of stone steps. Spread out in the distance are several important structures—the Governor's House on its lofty triple-terraced pyramid, a long block-like yet imposing structure; the House of the Turtles, on a lower level of the same terrace; the House of the Pigeons, with its serrate roof-comb looking like a long line of window-pierced gables, and behind these still the solid masses of the two truncated pyramids, from which the buildings have disappeared. At the left again are seen two or three inferior pyramids, and in the midst of the forest, at the right, are the crumbling remains of other important structures. On all hands is the far reaching wooded plain, extending to the distant and perfectly level horizon. The associated map shows clearly the relations of the various monuments and gives a number of the ground plans.

NOTES ON THE DATA OF MICHIGAN ARCHÆ- OLOGY. *

BY HARLAN I. SMITH, SAGINAW, E. S. MICHIGAN.

So little scientific investigation has been made of Michigan Antiquities, that the results, in the way of literature and specimens, are comparatively meager. Students, therefore, have at present but few data available for study. Besides the scant literature, there are some careful observers who have a general knowledge of the resources of their own immediate region, and a few who possess manuscript notes, maps and photographs, which are of value to science. There are also several collections of authenticated specimens from Michigan, within the State and in eastern institutions.

This present knowledge of the antiquities of Michigan is no index of its archæologic wealth. The explorations which have been completed in a few of the mounds, village sites and other remains promise a rich harvest of facts for comparison, as the reward of future survey and excavation in the unexplored locations, and that many more such locations are yet to be discovered. The distribution of known antiquities also indicates that many more await the explorer, and the testimony of ethnology is in entire harmony with this suggestion. At this time the most feasible method of arriving at a fair comprehension of all the resources is by reviewing the data at hand; meanwhile, we hope that in the near future such a careful archæologic survey may be made of the whole State as will give a correct and complete idea of its archæology. In reviewing the data, it will not be necessary to burden the subject by repeating much of what has already been published, but only to refer to the sources of information, hoping that at some future time, when proper surveys and explorations shall have been completed, a synopsis of the present literature may be made and supplemented, with the results of those examinations, in a form which shall present at once to the student the complete evidence for Michigan.

The Twelfth Annual Report of the Bureau of Ethnology contains a résumé of the Mound Exploration of the Bureau. This report, which is one of the most recent publications mentioning any of the antiquities of Michigan, devotes less than half a dozen pages to the mounds of the State. The five embankments, known as "forts," along Rifle River, in Ogemaw County, near West Branch, are mentioned. Two of these are covered by heavy timber and dense underbrush, so that whatever evidence they have to offer to investigation is in its entirety, undisturbed by superficial excavation. Two small round mounds, in Antrim County, about four feet high and twenty feet in diameter, are also mentioned. These have been found to contain human skeletons, one in each mound in a sitting posture. The mounds were surrounded by a ditch,

* Presented at the first meeting of the Michigan Academy of Science, December 26th, 1894.

or slight hollow, from which, it is possible, a part of the earth for their structure was taken. In this respect they resembled Fobear Mound, No. 1, of the Saginaw Valley.

In one of the mounds mentioned in the report, was found part of a Busycon Shell, which had possibly been used as a cup or bowl. Its outer surface was covered with incised lines. The shell, which must have come from the sea coast, indicates either trade or travel, or both; while copper, identified as coming from the Upper Peninsula, found in the mounds of Ohio and parts of the south, indicates exportation, as contrasted with this and other evidence of importation. The report further mentions certain holes near the mounds in Antrim County, which now partly filled, are from three to four feet in diameter. Some of these pits have been excavated to a depth of six feet without reaching the original bottom. They were, doubtless, ancient cache pits, in which were stored corn and other provisions, and are similar to the Frazier cache pits of the Saginaw Valley, which were recently obliterated by cultivation. The officers of the bureau report no ancient mounds near the sites where Jesuit mission stations were located. It is stated that some mounds, to which attention had been directed, proved, upon examination, to be simply of geologic origin.

Preceding the publication of this report, the Bureau of Ethnology issued, in 1891, a "Catalogue of Pre-Historic Works East of the Rocky Mountains," compiled by Prof. Cyrus Thomas. In this the various pre-historic structures are classified geographically by states and counties. Following the enumeration of each series of works is a reference to the sources of information, either in manuscript, published form, or communications from local students. This catalogue was compiled chiefly from the printed records, supplemented by replies to inquiries addressed to persons mentioned in the records. It therefore embraces a greater number of references to the literature of Michigan Archæology than any other publication at present available for general use. So complete is this list, that it seems necessary to refer to but few of the publications appearing prior to its compilation, as such would only burden the student, who would be more benefited by direct examination of the catalogue. We may well, for the present, take it as a ground-work for future research, and later, continue the methods inaugurated therein.

The portion of this catalogue relating to Michigan is included between pages 106 and 117, and is accompanied by a map of the Lower Peninsula, upon which are indicated, in a general way, the locations of pre-historic works. It is interesting to note one of the causes which affects this indication—more works, in proportion to the natural distribution, are indicated where our European civilization is strongest. This point is doubtless due to opportunity for observation by intelligent persons not entirely occupied with frontier struggle, rather than to the possibility that this civilization has adjusted itself

to the old sites of culture because of a natural environment, as is often the case. Thus we find the map most thickly spotted in the southern part of the State and along the shores of the lakes, the places having been thickly populated for a long time, or traversed by intelligent tourists and navigators. Other localities that seem equally favorable are not indicated, possibly because they have not been visited by interested persons qualified to recognize and report upon them.

That many antiquities are omitted is not surprising, considering that the method employed in this compilation was only to record the knowledge then extant, without attempting to verify or complete it by field work. It is purely a listing and classifying of known facts, and the bringing together of material into a form for ready use, rather than the securing of new data. Such omissions, however, are of antiquities known only to individuals, and of which nothing had been published or brought before students. The pre-historic works of the State are listed under the heading of the thirty-nine counties in which they were known to exist, and are indicated on the map, which is here reproduced with a few additions. Their general distribution in so many scattered counties of a state which has not yet been carefully surveyed by archæologists, and where it cannot, for this reason, be expected that more than a few of them have been reported, even if recognized, is certainly indicative of their presence in many more of the counties.

Michigan is a region most favorable for human sustenance, having an intimate relation with the Great Lakes and the water-courses emptying into them, as well as including so many minor lakes. Facilities for fishing, as well as for hunting, are exceptional in such a region, and both climate and soil are conducive to rich forest and agricultural products. All of these natural advantages would tend to afford the aborigines not only the opportunity to sustain life, but also that surplus of time and energy which is always required by man in order that progress toward higher civilization may be made. In the light of these facts, it is confidently believed that this region must include numerous and peculiar resources for the study of the evolution of a people.

It is difficult to estimate the number of antiquities noticed in the catalogue, since the information from which this work was compiled is often vague, the indefinite words "group" and "number" being frequently used. However, it is certain that reference is made to hundreds of mounds, as well as to a number of embankments, mounds surrounded by circular earth-works, so-called "garden beds," cache pits and village sites, with a few shell heaps and effigy mounds. This assuredly tends to impress the student with the importance of the archæologic resources of the State, and with the belief that a vast store of knowledge awaits the thorough scientific exploration of so many remains, and that these known works are but a part of those really existing.

The "Michigan Pioneer Collections" contain papers by various authors, giving the results of surface observations and of some excavations, as well as theories relating to the subjects described. Several of the county histories contain items of importance, especially as they give descriptions of early observations, and furnish clues, which may be followed with profit in regard to the location of antiquities.

Dr. Bela Hubbard, in his "Memorials of a Half Century," has preserved valuable evidence, particularly upon those peculiar earthworks commonly known as "garden beds." The early "Gazetteer of the State of Michigan," by John Blois, mentions various traces of the aborigines, such as mounds, "garden beds," village sites and earthworks, and preserves a description of them at a time when but few, if any of them, had been disturbed by the advance of our settlers. THE AMERICAN ANTIQUARIAN has, from time to time, included articles recording locations and descriptions. Among the authors contributing these papers may be mentioned Prof. Frederick Starr, Mr. H. H. Carson and Dr. Bela Hubbard. The "Proceedings of the American Association for the Advancement of Science" contain several important records. The annual reports of the Peabody Museum contain references of interest, indexed under Michigan, as well as notes by Dr. Gillman.

In various reports of the Smithsonian Institution are papers conveying information from a number of students, foremost among them being Dr. Henry Gillman, of Detroit, and Mr. M. L. Leach, of Traverse City. Dr. Gillman has recorded much of interest on the mounds, as well as the ancient copper workings of this State, and has made special efforts in distinguishing certain characteristics peculiar to ancient man in Michigan. Among these characteristics he has classed the perforated humerus and flattened tibia, as well as the perforated skull which has been found frequently in this State, but is not often reported from other parts of the country. His papers are, in several instances, accompanied by maps and tables of comparative measurements. The map and descriptions in the Report for 1884, by Mr. Leach, of the mounds of the Maple River Valley, in Clinton County, were timely, as they preserved, in a careful and complete manner, much of interest regarding numerous earthworks found there, many of which might otherwise have been obliterated and forever lost to science. His notes on the so-called fortifications near Rifle River, in Ogemaw County, called attention to that locality, which resulted in the discovery of similar works in the immediate vicinity.

It is often the case that an account in a reliable publication brings to notice and examination antiquities that would otherwise be neglected, so that their evidence would neither be available for study nor for illustration in general discussion. On the other hand, such publication frequently brings simple works to a more prominent place and use than is accorded to important antiquities which are not so made known.

The general literature of Archæology, especially text-books and works treating of the antiquities of the whole United States or of North America, as well as works on Anthropology and Ethnology, contains more or less data relating to Michigan, which, although often fragmentary and scattered, should not be overlooked.

It is probable that sites mentioned by early explorers as of ethnologic importance are also of archæologic interest, and an investigation of regions to which the myths and traditions of the aborigines refer doubtless, would develop evidence of value. This being the case, in developing the archæology of the State to its full extent, ethnologic data should not be neglected. In truth, archæology is but a method of reconstructing ethnology or fossil ethnology; to study fossils we must also study the recent forms.

Members of the Bureau of Ethnology have made investigations in parts of the State, and have recorded interesting facts. The data thus obtained, as well as other valuable material bearing upon the archæology of this region, is on file at Washington, while in the National Museum numerous specimens may be examined.

In the Museum of the High School of Saginaw, E. S., there is deposited a collection of archæologic specimens from the Saginaw Valley, which was brought together by the writer. At the same time, were made various notes, maps and photographs, all of which are preserved, partly classified by locality, and arranged in envelopes in alphabetic order, with various cross references. It is hoped, eventually, to put these data on record; until then, although private property, they are at the disposal of students.

Dr. Henry Gillman, Dr. Bela Hubbard and Dr. G. A. Stockwell, of Detroit; Prof. W. H. Sherzer, of Ypsilanti; Dr. J. B. Steere, of Ann Arbor; Mr. H. H. Crane, of Niles, and Hon. E. H. Scott, of La Porte, Ind., have more or less personal information in the form of field notes, maps, photographs and specimens.

It is altogether probable that there are a number of individuals possessing data and specimens, which, not being published, are unknown to students generally. Only by individual inquiry can they be brought to light, a task almost as difficult, and, perhaps, not as satisfactory, as to secure the data from the field. All of this information should be preserved, and in order that this be done systematically, it should eventually be brought together, put on record, and exhibited for students in some such institution as the State University Museum. Personal material is often lost to science unless such a course is taken.

Ruins of the ancient copper workings are of great importance. The resources for study in this direction are peculiar to this region in their unequalled richness. Mr. R. L. Packard, in his "Pre-Columbian Copper Mining in North America," published in the Smithsonian Report for 1892, has collected valuable evi-

dence upon these ancient workings, and has not neglected to make reference to important literature. His treatment of this subject is a revelation, to the student, of the wealth of this field in material for anthropologic study.

The ancient copper workings have also been mentioned by Dr. Henry Gillman in *Appleton's Journal* and the Smithsonian Publications; while Foster and Whitney's Report contains a good description and figures. Colonel Chas. Whittlesey, in the "Smithsonian Contributions to Knowledge, of 1863," treats them under the title, "Ancient Mining on Lake Superior," and many general works have mentioned them, while some private individuals have manuscript notes and maps of value in this study.

Among remains of interest at this time, when quarry refuse and workshop materials are receiving attention, are the caches, or deposits of chipped blades of chert. Fourteen of these caches have been discovered in the Saginaw Valley, of which records are kept. How many may have been plowed out or discovered in other ways, and scattered without even a mention, we do not know. Nine of these caches were described, in a general way, in the forty-second volume of the "Proceedings of the American Association for the Advancement of Science." Since the publication of this volume, the other five of these interesting hoards of the treasures of a primitive people have been reported from the same region, making a total of fourteen caches, thirteen of which were discovered within a radius of ten miles. One of the deposits contained raw material and but a handful of blades, while another included several hundred specimens, some of which were complete implements. The blades found in these caches were, perhaps, made at the quarries and transported to the village, there to be stored or buried in moist earth, which kept them in a workable condition. There they could be easily obtained, and worked up into the various specialized forms of implements required for use, or they may have been used as they were, without specialization. The transportation of caches in this locality, doubtless, was by canoe, since all of them yet found have been near navigable water. The material of which the blades, from the majority of the caches, were made, is thought to be from the chert nodules of the sub-carboniferous series, which outcrops, in a circular line, along the shore of Saginaw Bay, near Bay Port, through the head waters of the Cass and Shiawassee Rivers, at Jackson, etc. This outcrop is deeply covered by glacial drift throughout much of its extent. Where the rivers cut through the glacial *debris* and along the bay shore the rock could be easily quarried, and all of these places are in water communication with most of the village sites of the valley. Near them, it may be expected, will be found ancient quarries. In the study of these caches, particular endeavors have been made to locate the quarries. In other respects the sociologist will find this study most interesting.

At the World's Columbian Exposition a small exhibit of material and plans was made, illustrating, in a measure, the

archæology of a portion of the Saginaw Valley. The exhibit occupied seventy-five square feet of space, and consisted of but a part of the results of work in the territory indicated. Maps were exhibited, locating, as near as possible, the principal village sites, workshops, graves, burial places, mounds, caches, etc., while the specimens were arranged with reference to these maps. All the material from one village site was placed together, so that the visitor could readily see what had been found at any single locality, and would know just what one might expect to find on a village site. Two crania, each presenting certain anatomical peculiarities, were also exhibited. Although many skeletons have been discovered by workmen in this region, practically all were ruthlessly destroyed, and none have been saved for science in their entirety. A mass of specimens from various parts of the valley, which could not be classed as from any particular village site, but was thought to be more properly termed general surface material, was arranged upon the basis of form. In this series the chipped implements were placed together, then the celts, grooved axes, ceremonial slate object, etc.

The endeavor throughout the arrangement of the entire case was to give the best possible opportunity to study the specimens, to show a use for such material and for careful exploration, and with the aid of maps and photographs, to convey to the visitor some information respecting the archæologic resources of the Saginaw Valley.

The University of Michigan has recently undertaken to foster the study of the archæology of Michigan by preserving records and specimens, as well as by giving instruction in it as a special study in anthropology. The writer gave a résumé of the work of this institution in the *University Record*, of February, 1894, and in the Memoirs of the International Congress of Anthropology, held at Chicago, in 1893, under the title, "Work in Anthropology at the University of Michigan." He has also mentioned later developments in this line in "Anthropologic Matters in Michigan," a paper in the "Proceedings of the American Association for the Advancement of Science," for the forty-third meeting, held in Brooklyn, N. Y., in 1894, as well as in minor papers. From these a few facts are here given: In the second semester of the college year 1891-92, the University offered its first work in Anthropology—a course in Museum Laboratory Work in American Archæology. Students availed themselves of this course, and in addition to the investigations which they carried on for themselves, considerable work was done for the University Museum. In the west end of the lower hall of that building two large wall cases were constructed, extending the full length of the alcove, for exhibiting such collections as were thought to be of interest to the general public. A room in the museum was secured as an anthropologic laboratory, and to this room was taken all the material belonging to the department, which had not previously been

arranged for exhibition. Those collections on exhibition were left in the cases, not to be removed, unless required for special study, until the other specimens were placed in proper shape. The University library loaned to this laboratory such books as were required for use in connection with the work to be carried on, and various materials required for immediate work were obtained.

Upon examination, after the specimens had been brought together, it was found that the University was in possession of a much more valuable collection than was generally supposed. Besides the specimens of general anthropologic interest, were found a few of especial interest to students of Michigan Archæology. Among the various skulls is one perforated cranium, from Michigan, similar to those discovered by Dr. Henry Gillman near Detroit. There is a limited assortment of stone implements from the surface in the vicinity of Ann Arbor. This collection includes chipped points from arrows, spears, knives, scrapers, drills or perforators, and a few celts, or chisels, used also as axes; there are also some hammer-stones, about a dozen charm stones, or ornaments, and an iron tomahawk. The latter is modern, and was, doubtless, used by the Indians not more than one hundred years ago. Such iron implements were often obtained by them from the French traders. Through the efforts of one of the students a fund was subscribed, with which the so-called "De Pue Collection" was purchased. This includes a series of stone implements from the vicinity of Ann Arbor, which was collected by the late Mr. De Pue, of that city. A number of stone hammers in the museum collection were secured by the late Dr. Winchell, from the pre-historic copper mines of the Lake Superior region. Professor W. H. Sherzer recently presented to the museum several large stone hammers, or mauls, which he collected from the ancient copper pits, or mines, at Isle Royal, Michigan. These hammers were used by the primitive miners in obtaining some of the copper which is so widely distributed throughout the mounds of the whole Mississippi Valley.

Dr. Ames several times made use of parts of the collections to illustrate his introductory lectures to the classes in history. By means of them he carried his class from the earliest times, when man first used flakes of stone to supplant his finger nails and teeth in the various labors to which the latter were not well fitted, down to the time when archæology ends and history begins — the time when man began to live in communities, and to practice the various arts which we consider indicative of civilization.

With the coöperation of the Detroit Branch of the Archæological Institute of America, the University has been enabled to take up the investigation of the so-called "garden beds" of the State. This work was instituted in 1892. At that time photographs were taken of the surface, and two careful surveys by experts were made of the earthworks on the land of Mr.

Charles Price, near Oshtemo, Kalamazoo County. From the data thus obtained, a contour map has been made of a set of these earthworks, which were well preserved and protected by the natural timber. During this season a survey has been made of the "beds" upon the land of Mr. C. A. Glynn, some three miles distant. The location and size of the oak trees growing upon the ridges has been noted, and cross-sections of the earthworks have been cut and photographed. From the maps, together with the photographs and other data, it will be possible to construct an exact model of these interesting works, not only as they now appear, but, also, as they were supposed to be originally. Such models of typical earth-works, together with the maps, photographs and the specimens found during the excavation, would be of great value to science, and also of a popular interest to the people of Michigan. Thus far, particular attention has been paid to the "garden beds" in Kalamazoo County, but similar earthworks remain to be examined in various sections of the State. The report of the work thus far done is to be made direct to the Detroit Branch of the Archæological Institute of America.

So rapid has been the accumulation and arrangement of material in the University, that the cases already constructed are now entirely inadequate, and new cases are about to be built to accommodate several collections that have been promised, and to make room for photographs and diagrams from the laboratory.

Scientific work in anthropology can now be easily carried on and arranged for at the University in all the branches of study, except pre-historic anthropology. In that must be had the coöperation of the land owners of the State. With them let us plead for the preservation of all of the archæologic remains until proper exploration can be made by men trained and experienced in such work. Meanwhile, it is desirable to secure, as rapidly as possible, archæologic collections when accompanied by the proper data in regard to the locality where, and the conditions under which, the specimens were found.

Any object relating to pre-historic times, when authentic and accompanied by a label, and any information or report in regard to mounds, earthworks, quarries, etc., will be gladly received. Original research is to be encouraged, and a rigid adherence to scientific methods must be followed, in order that the new department may not fall to the level of a museum of curiosities, instead of holding to its original purpose. The work of this laboratory and the outside explorations have been carried on by special subscription, the only expense to the University being the furnishing of space in the Museum Building.

The recent advances in the work of Anthropology indicate that, on the whole, interest in the study is progressing in the State. From the nature of the field in its original richness, unexplored, and peculiar to itself, such an awakening of interest is highly desirable and satisfactory. The question of vital im-

portance now is, how shall this interest be directed so as to produce the best results, and to avoid the mistake that has been made in other localities of unintentionally destroying and ignoring valuable evidence. With the present advantages for study and such improvements in methods of research, the outlook for Archæology was never before more encouraging.

* A plan for the development of Michigan Archæology, and especially for an Archæologic Survey of the State, was presented with this paper at the meeting of the Academy. This plan being strictly of local use to the people of Michigan appears in the *Inlander* of the University of Michigan, for May, 1896. Michigan's neighbor State—Iowa—is making efforts along the line for an archæologic survey of the State. No doubt, the future will see both States actively engaged in the preservation and study of their respective archæologic resources.

EAST INDIAN FOLK LORE : ADVENTURES OF THE BRAHMIN KALA-SARMA.

BY THOMAS W. KNOX.

Many of the folk-lore tales of India have been rendered into English and other languages, but there is yet a great number of them that have not been translated, and a goodly portion of these exist only among the narrators, and have not been put upon paper in the native tongue. Many of the Indian stories illustrate the traits and foibles of human nature, and remind the reader, or listener, of the fables of Æsop, Lafontaine and other famous writers in that line.

An excellent specimen of Oriental folk lore is found in the account of the adventures of the brahmin Kala-Sarma.

According to the narrative, the brahmin suddenly found himself possessed of a considerable amount of money, having previously been in quite ordinary circumstances. He decided to make a holy pilgrimage to the River Ganges, in order to obtain pardon for his sins, and to bathe in the waters of the sacred river.

While on his way, he one day entered a desert through which flowed the River Saravasty, and immediately on seeing the river he proceeded to make his usual ablutions. He had barely entered the water when he was accosted by a crab, which asked him where he was going? When the crab learned the destination of the brahmin, he asked to be transported to the sacred stream, and promised that if the brahmin would render him that service he would remember it all his life, and would do everything he could to return the favor and make himself generally useful.

The brahmin was somewhat astonished at the offer of the crab, and asked him if it was possible that a being so weak and insignificant could render any service to a man, and especially to a Brahmin; to which the crab replied that he would give his answer by telling a little story. The brahmin sat down on the bank of the river, and when he was comfortably settled in his place, the crab spoke as follows:

"In the city of Pravabatty there was a king named Adhita-Varma. One day this king went hunting in a thick forest, accompanied by a large number of the attendants of his court. Very soon they saw an enormous elephant approaching; so immense was the beast that all of the followers of the king were frightened, and would have run away had they dared to do so.

"The king calmed their fright, and told them he intended to capture the animal and take him to the royal palace. In order to do so they dug a deep ditch, covered it with leaves and limbs of trees, and then drove the elephant in such a direction that he fell into the ditch, being deceived by the foliage that concealed it.

"Having succeeded in trapping the beast, the king informed his people that it was necessary to leave the creature to starve for eight days; at the end of that time his strength and courage would be gone, and he could be taken out of the trap into which he had fallen.

"Everybody went away and left the elephant to his fate.

"Two days afterwards a brahmin happened to pass that way, and seeing the elephant in the ditch, asked how it came about that he got there?

"The elephant told the story of his unfortunate adventure, and of the torments that he was undergoing through hunger and thirst. He besought the brahmin to take pity on him, and assist him to regain his liberty.

"The brahmin said it was impossible for him to take such an enormous creature out of the ditch, whereupon the elephant cried and renewed his pleading, beseeching the brahmin to tell him of any possible way of escape.

"To this the brahmin replied, that if the elephant had ever rendered a service to anybody he ought to call him to his aid, and offered to carry any message that the animal might wish to send.

"'As to that,' replied the elephant, 'I can't think of any service I have rendered to anybody, that is, anybody of consequence. By the way, though, I did do a service for the rats, but I don't see how they could help me, they are so small.'

This was the way it happened:

"'In the province of Calinga there was, at one time, an immense number of rats, which ate up the grain that had been gathered, and also that which was growing in the fields, in fact, they threatened to create a famine by the destruction they made. The inhabitants went to the king, and begged him to protect them from the scourge of rats by destroying them. The king gathered all the hunters in his kingdom, supplied them with nets and traps of all kinds, and sent them out to pursue the rats. The hunters worked diligently and with much intelligence, and in a little while they had caught all the rats, and placed them in large earthen vases in the palace yard, where the king ordered that they should be left to die of hunger.'

" 'Well,' continued the elephant, 'I happened to pass that way, where all the rats were shut up in the vases. The chief of the rats heard me, and called out. He begged me to take pity on him and his companions and save their lives. Of course, that was perfectly easy for me, said the elephant, all I needed to do was to break the vases with my trunk and feet and let the rats go free. I broke every vase, and thus delivered them from certain death. The chief of the rats thanked me, and said he would always remember my kindness, he and all his people, and if they could ever serve me in any way they would do so.'

" 'Very well,' said the brahmin 'I will carry a message to the king of the rats, and we will see what he can do.'

"Just then a parrot called out from a neighboring tree, and the elephant said, 'Oh, I remember another thing. At one time the princess of the same province where the rats were set free had captured the queen of the parrots, and put her in a cage, which was hung very high in a tree, where nobody could reach it. I was able to take it down with my trunk, and did so; then I broke the cage, and the queen of the parrots was able to return to the forest.'

" 'Well, there is your messenger,' said the brahmin, 'call the parrot, and tell her to go and tell her queen what has happened to you, and let the queen send a messenger to the king of the rats.'

"The next day the rats came in millions, and so did the parrots, the latter being commanded by their queen, while the rats were accompanied by their king. Under the direction of their king, the rats scratched at the edge of the pit, slowly filling it with earth, and at the same time the parrots broke branches from the trees, and threw them to the elephant, who trampled them under his feet along with the earth. So successful were they, that before sun-down of that day the elephant was able to walk from the pit and return again to the forest.' "

"That is the end of my story," said the crab. "Now, if a rat can render such an important service to an elephant and save his life, don't you think it possible for me to be of service to you in some way?"

The brahmin admitted that the reasoning of the crab was excellent, and did not hesitate any longer to take the little creature with him; accordingly, he placed the crab in his sack, and continued his journey.

In passing a dense forest they stopped at noon, when the heat of the sun was greatest, to rest a while under a large tree; the brahmin fell asleep beneath the tree, not knowing that near by was the cave of an enormous serpent. A crow had built its nest in the foliage of the tree, and the crow and serpent were great friends; they had arranged that when a traveler stopped under the shade of the tree, the crow was to give warning to the serpent by a peculiar cry, whereupon the serpent would come out and kill the traveler with the poison of his bite, when

the crow would immediately gather all his tribe and feast upon the corpse.

Hardly had the brahmin fallen asleep when the crow gave the customary signal, and the serpent came from his cave and killed the brahmin in the manner described. Then the crow summoned all his kindred, and, while awaiting for them, he put his head into the sack of the traveler in order to see what it contained. At that instant the crab seized him by the neck, and held him, so that he was nearly strangled. The crow begged for mercy, but the crab refused to release him until he caused the serpent to restore life to the brahmin. Accordingly, the crow told his companions the predicament in which he was, and asked them to hurry to the serpent, inform him what had happened, and beg him to come quickly and revive the body of the brahmin. The serpent came at once, placed his lips to the wound which he had made, sucked away the poison, and returned life to the pious traveler.

The brahmin was much surprised when he came to his senses and found out what had happened, the crab narrating the occurrence while still holding the crow firmly in his claws. When the narration was finished, the brahmin said that as the crow had satisfied the conditions demanded of him he should be released, according to the promise of the crab. The latter replied that he would not release the crow at that spot, but would only do so at a considerable distance from the place. The fact was he did not intend to release him at all, but feared to refuse while in the neighborhood of the serpent. The brahmin carried the two of them a little distance along the road, and then, opening his sack, asked the crab to keep his promise.

"Oh, that would be very stupid," replied the crab, "no faith can be kept with the wicked — you cannot count upon their promises at all. Bear in mind that this crow has already caused the deaths of hundreds of innocent people, and if I let him escape, he will return to his old occupation, and cause many more deaths. Let me tell you a little fable," continued the crab, "it will interest you, because it is about a brahmin like yourself."

The brahmin said he would hear the fable with pleasure, whereupon the crab spoke as follows:

"A brahmin, named Astica, made a pilgrimage to the Ganges, and on his way he bathed in a small river that he crossed. A crocodile came to him soon after he entered into the water, and asked where he was going. Learning the destination of the pilgrim, he requested to be carried to the Ganges, where he hoped to live much more comfortably, as the river in which he dwelt was frequently dry in the summer. The brahmin consented, took the crocodile on his shoulders, and carried him to the Ganges. When they reached the banks of the sacred river, the brahmin deposited his burden near the water, when the crocodile requested that the traveler should accompany him into the stream.

"As soon as they were both in the water, the crocodile seized the brahmin with the intention of devouring him. The brahmin called out in great alarm, and also in anger, reproaching the crocodile for his perfidy. The crocodile replied that he was simply following the custom of others in devouring those who had helped them, and that if the brahmin doubted the truth of his assertion, he was willing to leave it to the decision of the first three judges that could be found.

"The brahmin agreed to this proposal, and the first of the judges to whom they appealed was a mango tree growing near the river. The brahmin asked the tree if it was right for us to injure those who had benefited us ?

" 'I do not know if it is right or wrong,' the tree answered, 'but I know well that it is precisely the way men treat me. I appease their hunger and thirst, nourish them with my fruit, and protect them against the heat of the sun with my shade ; but when old age or accident renders me useless to them, they cut off my branches, tear me up by the roots, and use me for fuel. From that I conclude that justice among men consists in killing those who have fed them.'

"Next, the brahmin appealed to an old cow that was grazing on the bank of the river, and asked the same question.

" 'Well,' replied the cow, 'all I can say is to give my experience. Up to this time I have rendered great service to men by giving them milk and calves and working in the fields ; now that I am old, and they can hope for nothing more from me, I have been driven out and abandoned, without help, upon the bank of the river, where I am exposed any moment to be torn and devoured by wild beasts.'

"Just then a fox came along, and the brahmin asked the same question that he had addressed to the cow and the mango tree.

"Before replying, the fox said he must know the entire affair, and the brahmin told him in full the story of what had happened. The fox laughed, and seemed to take the side of the crocodile ; but he said, with some hesitation, before I can make a final decision upon this affair, I must see how you two traveled together.'

"The crocodile had no suspicions of the intentions of the fox, and so allowed himself to be hoisted upon the shoulders of the brahmin. When they were a little distance from the bank of the river, the fox told the brahmin to deposit his burden upon the ground. Scarcely had the request been obeyed, when the fox, seizing a large stone, threw it at the head of the crocodile, and crushed his skull. Then, turning to the brahmin, he said :

" 'You have been very stupid, and it is strange that after all the dangers you have passed through you should be so imprudent ; remember that you can never make a lasting friendship or form associations with the wicked.'

"Then the fox gathered together all his family, and made a magnificent feast upon the body of the crocodile. The brahmin finished his pilgrimage by bathing in the waters of the Ganges, and returned home very much more wise than when he had set out."

"Now," said the crab to the brahmin Kala-Sarma, his benefactor, who had listened attentively to the story, "you should be convinced that it is impossible to make an agreement with the wicked, and that you can, without scruple, break faith with them. When you hold them in your power you should destroy them." Saying these words, he closed his claws upon the neck of the crow and strangled it.

After the punishment of the crow had ended, the brahmin, Kala-Sarma, placed the crab again in his sack, continued his journey, and in due time arrived at the Ganges, where he deposited his benefactor, as the latter desired. After having acknowledged his great appreciation of the important service that the crab had rendered him in saving his life, he made his ablutions in the sacred river, and returned to his country much wiser than when he started on his pilgrimage.

FOLK LORE ON STONE.

*BY COUNTESS EVELYN MARTINENGO CESARESCO.

While immense care has been bestowed on collecting oral traditions, folk-lore on stone has been passed by, if not with complete neglect, at least with comparative indifference. Nevertheless, the subject is one of great interest, and the search for materials cannot be taken in hand too soon, because if the mass of new learning is crowding out of the people's memories the treasury of old knowledge, it is equally true that the march of progress is daily destroying the old land-marks, white-washing or pulling down the old walls, demolishing the shrines, "restoring" the churches. If we want to collect, in this, as in other branches of our young science, we cannot make too much haste to begin.

There are some folk-lorists who wish that writing had never been invented, so distrustful are they of the written word. They almost go to the length of saying that what is written down is not folk-lore. So much mischief arose from a too liberal interpretation of the term, popular traditions, that the highest authorities will agree that the field to which I invite folk-lore explorers lies within their legitimate sphere of activity. It is our rightful territory, even if it has not yet become a state of our Union.

The only useful way of collecting inscriptions is to note down as many as we can, without inquiring into their precise

*Read January 23d, 1895, Folk-lore Congress, Memphis, Tenn.

value or trying to decide, as we go along, what is the exact category to which they belong. Afterwards, of course, a great deal of sifting would have to be done. The geologist does not put into his bag only perfect specimens; the weeding out of rubbish takes place at home, in his study.

To give an idea of the kind of inscriptions which I should like to see preserved, I may mention the mottoes on the walls of churches; such as those which accompany the pictorial representation of the Dance of Death on the church of Clusone in the Province of Bergamo, or those to be found under a central cross or emblematic figure in graveyards, such as the words "Aujord'hui moi, demain toi" (I to-day, thou to-morrow), which can be read in the cemetery of Courmayeur, at the foot of Mont Blanc. Sometimes a characteristic word is added to the customary request for a prayer on the crosses by the road-side, which mark the spot where an accident or a crime occurred, and where a human life was spent. I read on one of these, near Toscolano, the admonition, "So live that you may live." The innumerable little chapels and shrines which you meet scattered in the Italian by-ways very often bear an inscription. These shrines are not the less attached to the great body of universal beliefs, because the mild face of some Christian saint looks down at us from them. How is it possible not to be reminded of the Roman garden god to whom the cottager brought the firstlings of the blossoming spring, and in their season, yellow violets, pale gourds and fragrant apples; and again, of the paternal Lares that was thus addressed by Tibullus: "Be it no shame to you that you are fashioned out of an old trunk, for even so you inhabited the abode of my old grandfather. The men of those days kept better faith, when a wooden idol stood in a small shrine and received poor offerings. The deity was propitiated, if one gave it a libation from the new vintage, or set a crown of corn-ears on its sacred head. Whoever had had his wish fulfilled carried offerings to the god with his own hand, followed by a little girl bearing fine honey-comb."

The recollection of such records as these of what was most tender, and lovely, and human, in the old cultus comes to our minds frequently when we see the bunch of fresh flowers set in front of the poor little image or picture which is trusted to bring a blessing on the fields hard by, and before which the traveller is begged to utter a word of praise, or prayer. It is not in any mocking spirit that such analogies are traced, but rather with a sympathy which grows in proportion as we realize how deep in simple hearts is the tendency to externalize in this manner their faith in a higher protection and their aspiration towards the unseen.

Though the inscriptions in this case are not unfrequently commonplace, there are some that we would not willingly lose, as for instance, the couplet (which is both Latin and Italian) from a chapel overlooking the Mediterranean:

In mare irato, in subita procella,
 Invoco te, nostra benigna stella.
 (In sudden peril, on the raging sea,
 O thou, our star benign, we call on thee.)

In mountains, instead of the "star of the sea," the wayfarer invokes "our Lady of the Snow."

Wayside crosses are generally without inscriptions. Not long ago, however, near Sorrento, I saw one bearing what I thought was the most solemn and touching motto I had ever read: "non ci si pensa" ("*they do not think about it*"); that is all; but how much it expressed!

Another class of inscriptions are those engraved over those precious sources of pure water which, from the most ancient times, have been regarded as holy. As an example of the continuity of reverence inspired by wells and fountains, especially in dry countries, I may mention that I saw a Turkish inscription over the Pierian Spring which is passed in the ascent to Acro-Corinth. The Turks, during their dominion, had honored the place as the Greeks had honored it long before.

In Switzerland, and in Tyrol, almost every house has inscriptions on the walls and on the beams; many of these are well worth recording.

Another class, and to me an interesting one, is that of sundial mottoes. Here is one from the village of Orzi Nuovi, not far from my Lombard home:

Deh! Fra quelle che t'escono dal seno,
 Segna per noi felice un'ora almeno.
 (Oh! 'Mongst the many hours that leave thy breast,
 Mark thou, at least, one hour when we were blest.)

A second dial in this village is inscribed: Meam noscis, Tuam nescis.

In the Val Anzasca in Piedmont, I wrote down two mottoes: Son figlia dl sole, e pur son ombra; (I am daughter of the sun and yet a shadow); and this: "Io ti do l'ora se il ciel risplende;" (I tell you the hour if the heavens are clear).

Everywhere, of course, we come across quotations and variations from the Bible, such as "Fear God for the hour of judgment is at hand;" or, "The hours of man's life fly like a shadow;" or, "I am a voice crying in the wilderness; Time is short!" In the valley of Aosta I saw this, which is, I think, original: "Le temps presse, faisons le bien;" (Time presses, let us do good.) And in the same valley a dial bears the striking words: "Afflictis lentae, celeres gaudentibus horae;"

The hours pass slowly to the grieving heart,
 But all too quickly from the glad depart.

I hope that this brief paper, though of no value in itself, may serve as a sign-post to others; and I wish them good fortune in carrying out the search which I have only suggested.

THE SCHUYLKILL CANNON.

REV. WM. M. BEAUCHAMP.

I have been much interested in Mr. Hale's history of the Schuylkill Gun, a brief account of which was sent me when I was asked to define the inscription some years ago. Recognizing it as Iroquois and, apparently, Mohawk, I took pains to ascertain its probably original form. Fortune favored me. On my way to my interpreter, the Rev. Albert Cusick, who assisted Mr. Hale in translating the Iroquois condolence, and whom he speaks of as "an intelligent and educated man," I fell in with another educated Indian—a Mohawk—whom I had met in Canada. We went on together. My notes are given below, being made at the time in the fifth manuscript volume of my "Onondaga Antiquities." They follow the brief history, the inscription, and the conjectures thereupon in that volume.

"October 4, 1890, I was at Onondaga Reservation, and submitted this to A. Cusick and O-ji-ja-tek-ha, an educated Canadian Mohawk. Both agreed that it was a Mohawk inscription, incorrectly given at first, or now changed in form. Cusick rendered it *Kah-wah-ne-je tsi Kehnt-ru*, and considered this "A prolonged sound, or one traveling on," and "on the ground." His full interpretation was, "The long sounding (reverberating) thing lying on the ground."

"O-ji-ja-tek-ha gave his own spelling : *Ka-weⁿ-na-tsip tsi Keⁿ-de-reⁿ*, and interpreted this, "Loud, prolonging sound, produced by the thing that lies upon the ground." As he pronounced the words I would have spelled them differently. *Tsi* really has much the sound of *che*, but is *cha* in Onondaga. *Kah-wa-nis-neh-kehate* is a term now applied to some of the wind instruments used by the Onondaga brass band. It is curious that a Mohawk inscription should have been placed on a Pennsylvania cannon, but its appropriateness is evident."

It is proper to say that these two educated Iroquois, the one an Onondaga well versed in all the dialects, and the other, a Canadian Mohawk, discussed the question fully, and arrived at similar conclusions independently of any suggestions of my own. I inferred that the term might be applied to a heavy gun on a low carriage, and not used as a field gun. A deep hole in the Onondaga Creek is called by the Indians *Kah-soon-a-wah-na Ku-sah-ta*, or the Cannon Hole; the first word suggesting the *Kawania* of the inscription.

While the interpretation given me seems natural, there is a way in which it harmonizes with that of Mr. Hale. On page 200 of his "Iroquois Book of Rites," he defines *Keweniio* as meaning "to be master." On page 202 *Kawenna* is defined as "word, voice," etc. If we change the termination into *io*, we

would have a great or loud voice. This seems to have been the opinion of my interpreters. Words have changed, but Bruyas defines Gawendio "to speak well." The "G" and "K" were always interchangeable, and the "D" has been softened. This is on page 64 of his "Mohawk Vocabulary." On the next page, Gawendio is rendered to be "master." Obviously, according to both these eminent philologists, there is here a choice of interpretation. Is there any harmony between them? It is found in the well-known character of Iroquois eloquence. The Speaker might not be the civil head of affairs, but he was always a principal chief, the master spirit, the prominent personage in every council. To speak loudly and well in these important gatherings would be easily equivalent to being a master of affairs. In this double sense it might easily be applied to heavy artillery, the sound and effects of which were so great. The gun was the speaker. To me it would express quite as much the mastery of Iroquois eloquence as of Iroquois arms. Mr. Hale well says that in testifying to the importance of that confederacy, "the Schuylkill gun becomes exalted from a mere useless piece of metal to a relic and monument of much historical importance." If my inferences are correct regarding the definition given me, and if free thought is of little avail without free speech, this loud and prolonged voice, or sound, may be even more "fairly deemed a symbol of free thought."

A word more regarding the origin of this inscription. It is evident from the Pennsylvania records that the Mohawks rarely visited that colony, while there was frequent diplomatic correspondence with the other nations through the medium of the Great Council Fire at Onondaga. A few Mohawk names occur after 1747, I think of none before; and if we refer this inscription to the Onondaga chief Canassatogo, it should have been in Onondaga. Mr. Hale partially indicates the probable source. The Moravian missionary, Pyrlæus, studied Mohawk with Conrad Weiser, in 1743, for three months, and on the 17th of July took up his residence with the Mohawks, remaining with them until some time in September. He opened his school for teaching Mohawk, at Bethlehem, Pa., February 4, 1744. Zeisberger was one of his pupils, afterwards mingling the Onondaga and Mohawk in what is known as his Onondaga Dictionary. From Weiser or Pyrlæus the words probably came. As yet, most prominence had been given to the Mohawk language for many reasons. It closely resembled the Huron, and, therefore, was a favorite with the Jesuits, who used Mohawk names even at Onondaga. It was the first with which the Dutch and English came in contact, and most of the early interpreters spoke it. The first printed Iroquois books were in that tongue, and thus it became the representative dialect. This accident of position has also its historical importance, and should be remembered in dealing with many questions. I am glad that Mr. Hale has brought one of these to public attention.

EGYPTOLOGICAL NOTES.

BY WILLIAM COPLEY WINSLOW.

PHILAE illustrates how poetry and science blend in archæological work, especially in Egypt. It is the archæological Ilium of that land, and Captain Lyons is to-day the Schliemann there. On the north side of Philae he has cleared the site of a temple of Augustus, and on the south side he has restored the grand colonnade to much of its former beauty by simply removing rubbish and repairing in places the exquisite shafts. He has rebuilt a small temple constructed by Ptolemy IV and Tiberius, and found inscriptions which show that a certain king of Ethiopia aided in its building. If Ergamenes (?) did so, it verifies the conclusion of Dr. Mahaffy, that he and Philopator were contemporaries. Captain Lyons has also cleared the Coptic town of Philae, which was the castrum of a late Roman age, and found interesting inscriptions, two of which are on the walls of the great temple, and record the names of two prophets of a new deity, Ptiris, who is represented in an adjoining picture with a hawk's head, a crocodile's body, and a tail in the form of an uræus serpent. One of the inscriptions is dated in the year 435 A. D. Several other inscriptions have turned up which throw light on the history of Philae in the late Roman or Byzantine period; but, best of all, Captain Lyons found near the temple of Augustus a granite stele, on which, below the figure of an armed horseman trampling on a fallen enemy who vainly tries to defend himself with a shield, is a trilingual inscription in hieroglyphs, Latin and Greek. The text is of historical importance, as it relates to

"The Roman citizen C. Cornelius Gallus, the first prefect of Alexandria and Egypt," who, "after the conquest of the kings by Augustus, suppressed a revolt in the Thebaid in fifteen days and captured the five cities of Borêsis, Coptos, Ceramicê, Diospolis [Thebes], and the great city of Ophiëum, putting to death their five leaders and leading the Roman army beyond the cataract of Abaton into a region never before visited by the Roman people or the kings of Egypt."

He then "received the ambassadors of the Ethiopians at Philae," took their king under Roman protection, and made him ruler of the Triacontaschoenus (for which see Ptol. *Geog.* iv. 7, 32, ed. Nobbe). Finally, the Roman prefect gave thank-offerings to all the gods and especially "to Nilus who had helped" him. The hieroglyphic text is dated in the first year of Augustus, the 20th day of the fourth month.

MR. NEWBERRY, of the Fund, has discovered three Sinaitic *graffiti* in the Wadi Gadammeh, about thirty miles north-east of Quia. Professor Sayce, of the Fund, writes that at Dêr-el-Bahari the work of excavation is practically finished, and that

Dr. Naville is to be congratulated upon the result. His restorations have given us again in a fairly complete state the most striking of ancient Egyptian sanctuaries. His most interesting discovery this year has been that of an XIth Dynasty tomb with all its furniture, except the mummy. At Abydos M. Amélineau has found, among other things, a richly furnished tomb of the XXIIInd Dynasty, and at Lisht, M. Gautier has disinterred some more interesting remains of the XIIth Dynasty. The finely executed statues of the Dynasty which he found there last year are now in the Gizeh Museum.

APOPI, or Apophis, under whom in all probability Joseph lived, at least during a portion of his time, in Egypt, is an interesting personage for the explorer to seek for light upon. A fine green scarab from the mounds of Kom Ombos brought to Sayce, naturally stirred his keen insight. He writes: "Great was my astonishment finding that it was inscribed with the words 'Sutekh Apopi.' Here, then, we have a record of the Hyksos king, under whom the war of independence broke out, confirming the statements of Manetho and the Sallier Papyrus that his rule extended not only over Lower Egypt, but over Upper Egypt as well. What is still more interesting is the testimony it bears to the accuracy of the Sallier Papyrus, where the king is called 'Ra Apopi.' Like a good Egyptian, the author of the Papyrus has substituted Ra for the heterodox Sutekh, which the scarab shows was prefixed to the royal name."

KARNAK LISTS.—Corroborative evidence abounds in Egypt. Within the west court of the great temple of Karnak, on the north side and a little to the east of the chapel of Seti II, a ruined angle of wall has been uncovered, on which are thirty-two names of places in Palestine captured by Thothmes III. They agree for the most part with the well-known Palestine list of that king, except that the arrangement of the names is somewhat different. We find, however, Shushkhen instead of Ashushkhen, and in Shemesh-atum the ideograph of the Sun is attached to the word Shemesh, while Harel appears to be written Har-Hor.

CHEOPS, the pyramadist (to add to Webster!), is a strangely attractive figure among kings. The ever-ready Sayce, to whom so much is due, relates a story that is all-important: "I have discovered (he writes) an inscription coeval with Cheops, the builder of the great pyramid of Gizeh, here in the island of Elephantinê. The *sebakh*-diggers have been very busy during the past summer among the mounds of the old city, which stood at the southern end of the island, and have pulled down a part of the ancient city wall, which was built in one place upon granite boulders. The inscription is upon one of the boulders, and records the visit to Assuan of Khufu-ânkh, whose beautiful granite sarcophagus is now in the Cairo Museum.

There is a drawing of Khufu-ânkh himself, leaning upon a stick, as well as of his boat, and the name of the king is 'writ large' within a horizontal cartouche. The only deity mentioned is Anubis. The inscription seems to have been engraved at the time when Khufu-ânkh conveyed his sarcophagus to the north ; as there is no reference to a pyramid, his visit can hardly have had anything to do with the transport of the granite blocks for the tomb of the king at Gizeh. It is the first time that any monument so old as the IVth Dynasty has been found in the extreme south of Egypt, and it must have been inscribed before the city of Elephantinê was surrounded with a wall."

PERSONAL NOTES.—Woman is coming to the front in Egyptology. In Egypt, this season, Miss Benson, Miss Paget, and Miss Pirie have performed admirable service in either direct discovery or in transcription. In some respects women make better copyists of the scenes and texts than men. Madame Naville's reputation as such is superior to almost any draughtsman of our day. Mrs. C. P. Buckman, of Boston, now a competent instructor in historical Egyptology, is thoroughly informed in the progress of discovery, and is already a translator of texts. Dr. Charles H. S. Davis, of Meriden, Conn., has done more than any other American to popularize (so far as is possible) an interest in Egyptology by his books and his magazine ; but is not the time ripe for our academicians, men and women, to elect it as a study at the university ? Chicago has its chair and trained professor—Yale, Harvard and Columbia should keep step to so an inspiring example. In my notice, in the last ANTIQUARIAN, of the great work, in six volumes, on the Tomb of Pakeri at El Kab, now being published, the author's name, Dr. J. J. Tylor, was misspelt by the compositor as Tyler. It is opportune to remark here that Mr. Somers Clarke (his companion) has now uncovered more of the foundations of the late temple-buildings in the ancient city, which are composed of stones taken from the ruins of the older temples standing there. Among the inscriptions discovered are three with the name of Rameses III, whose name must be added to the royal builders at El-Kab.

Senmut was the architect of the temple built by Queen Hatasu. Miss Benson has found in the temple of Mut at Thebes a splendid preserved statue in marble of Senmut, who was also its architect. The inscription states that he also superintended the construction of certain buildings in the temples of Karnak and Luxor, and was overseer of the granary of Amon. The inscription on the statue is longer and more important than that on the statue of the same individual which is now in the museum of Berlin. His walking-stick, with his name cut into it, is a trophy in the hands of the German consul at Luxor.

EGYPT RESEARCH ACCOUNT.—Under this organization Prof. Petrie directed Mr. Quibell to clear the brick galleries about

the Ramesseum, or funerary chapel of Rameses II. His work was most thoroughly done. The foundation deposits of the temple were discovered, and great quantities of ostraka, &c., of the same date. Besides these the galleries yielded dozens of burials of the XXIIIrd Dynasty, having been much divided into funeral chapels at that age. These were plundered anciently, but much valuable material has been obtained, the cartonnages giving many genealogies of royal relatives. The front court of the temple proves to have had Osiride colossi along the sides of it; and the construction of the whole temple and buildings around it is being completely planned. An earlier building has stood here, apparently; for in the axis of the court, at a very low level, a drum of a column of earlier work was found *in situ*. The whole site behind this had been used for a cemetery before the temple was built.

The funeral temple of Merenptah has been often attributed to Amenhotep II, owing to all the material having been plundered from the temple of the colossi. Some work remains of the later king; a large slab indicates a Sudan war by a procession of negro soldiers; the upper half of a colossal statue in black granite has preserved for us the finest portrait of Merenptah, with the features quite intact; and the great black granite stele of Amenhotep III was built in, with its face in a wall, and carved on the back with a scene of offering, and an inscription of twenty-eight long lines; altogether this stele bears about 6000 hieroglyphs. This later inscription describes the defeat of the Libyan king, and mentions the destruction of many places in Syria — above all, the crushing of "the people of Israel." Of the transliteration of the name there can be no doubt: that Merenptah about 1200 years B. C. left "the people of Israel without seed" is now a fixed point for Biblical criticism. But how this is to be adjusted to our other authorities will be a matter for much discussion.

The foundations of the funeral temple of Queen Tausert were discovered, with extensive deposits, in the sand. Five hundred scarabs and plaques, and twelve hundred objects of offering, all in colored glaze pottery, were found in this one site. The form of the name is new; but as the historical evidences show that it must belong to the age of this queen, and the cartouche can be read as hers (beneath its forced imitation of Rameses II), we can hardly refuse to see in this her temple begun before her marriage.

The similar foundations of Saptah's temple, with similar deposits but poorer in quality, were also found. No trace of Tausert occurred here; but each deposit contained a slab with the cartouches of the king, and another with the name of the chancellor Bai, and also rings and cartouches of Bai.

Of later times Rameses III had rebuilt part of the Ramesseum galleries; chapels were arranged in them in the XXIInd and XXIIIrd Dynasty, of which many pieces of wall-painting remain, and much cartonnage, bead work, thousands of ushab-

tis, and a great alabaster pan inscribed for a royal granddaughter, were obtained. A prominent bit of brick wall standing high on the south of the Ramesseum was part of a large tomb, which proves to belong to Khonsuardus, chief goldsmith of the temple of Amen in the XXVth Dynasty.

Professor Petrie has again covered himself with archæological glory, as is his wont nearly every season. Now that the Egypt Exploration Fund concludes its work at Dêr-el-Bahari this season, it will be well to resume original discovery as of old, after Mr. Petrie's method, and not to excavate any one great great edifice at large cost, which the government properly should do. Original discovery, as well as the all-important work of the Archæological Survey, are the "open sesame" to sharpen our archæological appetites and open our pockets.

ORIENTAL NOTES.

THE DATE OF THE EXODUS.—Prof. Breasted, head of the Department of Egyptology at the University of Chicago, has received a letter from Dr. Petrie, who is now exploring in Egypt, which details a discovery of utmost importance to students of Egyptology.

Dr. Petrie claims to have found in a temple at Thebes a slat of basalt, on which is written the earliest known record of the children of Israel. The slat is ten feet long, five feet wide, and one foot thick, and is the largest slat of basalt ever found. On one side is written the biography of King Merenetaḥ, whom Dr. Petrie supposes to be a son of Rameses II. The writing details the conquering of the Syrian and Assyrian nations, and refers to Israel in these words:

"The people Ysraal is spoiled; it has no seed."

Dr. Breasted claims for the discovery that it will completely revolutionize the present theory as to the time of the exodus. King Merenetaḥ reigned in Egypt during the fourteenth century before Christ, and the record effectually proves that the exodus must have taken place before that time instead of long after, as is now generally supposed.

THE LUNAR ZODIAC.

"It has often been observed that one nation might as easily have mapped out a lunar zodiac as any other, as all see the same moon and stars. But we now know that the Euphratean Solar Zodiac has been borrowed by nation after nation, simply because it was easier to borrow than to work it out; and the more we

investigate, the smaller the sphere of originality and invention is found to be. The general probability is that Babylonia, which has supplied the world with so much, has also furnished it with the scheme of a lunar zodiac. We possess, at least, seven complete specimens — Persian, Sogdian, Khorasmian, Chinese, Hindoo or Indian, Arab, and Coptic schemes. The Chinese lunar mansions are of Chaldean origin. The twenty-seven constellations, which were chosen in India, were supposed to come from Babylonia.

The Arab set of names go back centuries before the era of Mohammed. Prof. Whitney says: The Arab, Chinese, and Indian are three derivative forms of the same original. The lamented Terrien de Lacouperie illustrated with great accumen and learning the connection between China and Babylon. His views are supported by the studies of the Rev. C. J. Ball. Prof. Norman Lockyer has given lists of the Indian, Chinese and Arab mansions, with explanations of their names by Prof. Max Müller, Robertson Smith, and Douglass. These mansions have to do with the ecliptic; that is to say, a belt of stars traveling around the sun like the planets, or around the earth like the moon,—the mansions having identical functions.

The list of Persian mansions have the appearance of being translations from an Avesta original. The names of the Coptic lunar mansions are given by Weber. They are all from the ancient Egyptian or Greek. Mr. Kingsmill says: "That when the astronomers of Chaldea adopted the solar signs, and marked the beginning of the year by the solar culmination of the constellations, the Pleiades still occupied the place of honor, marking a date not later than 2150 B. C." Whatever may have been the case in other countries, in the Euphrates Valley the lunar scheme had probably, either solely or jointly with the solar scheme, a reign of many centuries.

The oldest known lunar zodiac is the Tablet of the Thirty Stars. Prof. Hommel thinks that the list begins with the Pleiades. He traces out six leading asterisms.

"The Foundation" (Pleiades), "the Jackal" (Aldebaran), Gam (the Cimetar in Tauri), "the Great Twins" (Castor and Pollux), "the Little Twins" (in Cancer, and "the King" (Regulus).

The immense importance of the Pleiades ("the Clusterers," not 'Sailing stars,' which, like 'Doves,' is an afterthought) in connection with astronomical-religious observances and the calendar, need not be further referred to here." *Transaction of Soc'y of Bib. (Arch.)*

NOTES ON EUROPEAN ARCHÆOLOGY.

Earliest Domestic Animals in Central Europe.—The explorations which have been made in the caves of the Saxon Alps have enlightened us considerably about the primitive inhabitants of that region and their culture. The earliest human visitors were roving hunting tribes, immediately after the glacial age, when it was so cold that the reindeer was abundant and became their chief food. They did not, however, domesticate it. These were followed, and driven out, by the incursions of tribes from the south, who brought with them two varieties of dogs and also two varieties of cattle, the *Bos taurus* and the *Bos brachyceros*. They soon added to these the horse and the hog.

All these animals were tamed from wild species indigenous to the German forests. Considerably later, and possibly by another people, though still in pre-historic times, were introduced the goat, the sheep and the common barn-yard fowl, all of which originated east of Central Europe.—(*Globus*, No. 13, 1896).

Origin of Early Medieval Art.—In a note on some early medieval jewels in the form of flies, Baron de Baye traces them eastward from France down the Danube, and inclines to believe that they, as well as a number of other "zoöomorphic" decorations which prevailed at the time, were products of the Greek colonies on the Black Sea. He points out that this influence extended along the trading lines very soon after the fall of the Western Empire, and gave the earliest impetus to the arts of the barbarians who overran France. His paper on the subject is in the "Memoirs of the National Society of Antiquaries of France," Volume 54.

Surviving Primitive Conditions in Europe.—There are few parts of the Continent of Europe where the traveler can find himself in touch with primitive conditions of society. One such is probably among the Albanians, and another certainly is with the Mordwins of the Upper Volga. They belong to the Finnish family, and have occupied the same locality from the remotest times. The archæology of their country has been studied by M. Yastrebov and their modern condition by Prof. Smirnov. Some of them still live in log houses partly below the surface of the ground, with sod roofs. Their religion and ceremonies, though nominally Christian, retain much of the ancient paganism. Sexual morality is practically unknown. Girls from fourteen years are allowed free relations with the other sex. They rarely marry before 22 or 25 years of age, and should they bare a child before that time, it is looked upon as welcome by adding to the strength of the family. The nearest ties of kinship do not stand in the way of these relations. Marriage is ceremonially "by capture," and the religious sanction is often dispensed with.

Pre-historic Times in Southern France.—In the journal *L'Anthropologie* for December last, M. Fournier reports the results of five years¹ work in the pre-historic "stations" around Marseilles. Though the yield was not rich, it was significant. The oldest deposit dated from the middle of the palæolithic age. It contained no polished stone implements, no pottery, no bones of domestic animals. There were very few ornaments, and the bones were not engraved or decorated.

In the Neolithic deposits, the earliest show rude, undecorated pottery, a variety of stone implements, and fishes which must have been caught in a net, as well as others killed by harpoons. Later deposits are rich in polished stone and ornamented pottery. The bones of the horse, ox, goat, sheep and dog abound in refuse heaps left long before any metal implement was known. An interesting fact is that these stations do not reveal any gap or hiatus between the older and the newer. There appears to have been a gradual growth in culture among the same people and their descendants.

Celtic Studies.—Renewed interest appears to be awakened in the ancient Celts, both from the view-point of archæology and of philology. A journal has just been launched, *Zeitschrift für Celtische Philologie*, under the competent editorship of Prof. Kuno Meyer and Dr. L. C. Stern, devoted to the study of ancient Irish, Welsh, American, etc., as well as the folk-lore and mythology of the Stock. Prof. Meyer has also edited several of the mythical voyages of the ancient Irish, such as "The Irish Odyssey" and "The Voyage of Bran," etc.

The anthropological status of the Celts remains as uncertain as ever. Were they, as Broca taught, the ancestors of the round-skulled, dark-haired, undersized population of Central France? or of the long-skulled, red-haired, large-limbed Gaels of Scotland? Both types are represented in Ireland, the dividing line being the Shannon River. Historically, were they the Galatians to whom Paul preached in Asia Minor, the Cymri of the Crimea, and the soldiers of Brennus who burned Rome? These are inquiries which still await positive replies.

The Babylonian Exploration Committee of the University of Pennsylvania has been obliged to withdraw its exploring party on account of the disturbed state of the country. It was dangerous for them to remain.

The Egypt Exploration Fund has received contributions from America, and has in return sent material to Boston and Philadelphia.

The Berlin Museum of Ethnography has had two representatives in South America — Dr. Uhle and Dr. Ten Kate. The former is now working for the University of Pennsylvania.

Dr. E. Seler is now in Mexico, in the interests of the Duke de Loubat, I have heard. Dr. Sapper is collecting in Guatemala for some German institution—I know not which.

There are large and fine collections from Egypt and Western Asia in the Boston Museum of Art, the Peabody Museum of Archæology, the Museum of the University of Penna., the Metropolitan Museum of Art, and several others in Eastern cities.—D. G. B.

ETHNOLOGICAL NOTES.

Mr. James Mooney has been studying the Kiowa Indians, in Oklahoma, for about six years. This is one of the most primitive tribes in the West. Their tepees, built of poles, are of a conical form. In the summer they live under arbors. They bury their dead in caves, and have a custom that when a person dies all his property is immediately accumulated and burned. All his horses, dogs and animals are killed. All his relatives change their names. Their mythology is quite as elaborate as that of the Zunis. All the objects of creation and the nature powers are deified by them. They have a tradition that their ancestry were released from an underground cave by a person called the "sun-boy." Hypnotism prevails among them. They also practice the ghost dance. They believe that the next world resembles the present world, and good and bad dwell together. The rites of initiation resemble that of the Mandans. The boy usually goes to the mountains, where he fasts and prays for a medicine and a guardian spirit. He spends several days and nights without sleep, finally becomes unconscious, and sees visions, and receives the instructions. On returning to his tepee, he begins to carry out the instructions, and makes for himself an image of the person seen in the trance, and wears this as a charm about his person.

W. J. McGee has led an expedition into the Seri country, southwest of Arizona, and has visited a number of tribes to which access has never been gained. The Seri were very shy, and disappeared as soon as the white man's presence was known. The facts concerning the tribe and the country have already been published in "Science" and other periodicals.

Dr. W. J. Hoffman has spent much time in studying the Menominee Indians, located in Wisconsin, and has prepared a report, which will be published in the "Fourteenth Annual of the Ethnological Bureau."

EDITORIAL NOTES.

THE ESTHETIC TASTE AMONG THE SAVAGES.

As to the Esthetic Taste the evidence is that even the most primitive man possessed it, and delighted in decorating himself in personal ornaments; for perforated shells, apparently used for necklaces, teeth of deer and other animals, pebbles of Rose quartz and other ornamental stones, rock pieces of bone, and the ivory of the mammoth, as well as many carved and engraved specimens, are found in the earliest cave dwellings and rock shelters.

Flowers are very favorite decorations with the early mound-builders, for Mr. Wm. McAdams found little bouquets and bunches of flowers, which had dried, but been preserved by contact with copper relics, at the bottom of the mounds, in the great American bottom, opposite St. Louis. He also found many finely-wrought specimens of pottery, some of them very close imitations of shells.

The caves at Tennessee also contained the bodies which had been wrapped up in the original feather-dresses with which the person had been clothed, showing a taste for color as well as form.

Flowers are very favorite decorations with the South Sea Islanders, and many have noticed the vague, esthetic atmosphere thrown over the Polynesians, by the profuse employment of blossoms on all occasions.—S. D. P.

CORRESPONDENCE.

To the Editor of the American Antiquarian :

The apparent intention of Hon. Jas. Wickersham, in his very interesting paper in the Jan.-Feb. number of THE ANTIQUARIAN, entitled, "Pueblos on the Northwest Coast," is to trace an affinity connecting the "Kaduckubt" Indians of that region with those generally known as "Pueblos," residing in Arizona and New Mexico, as proof of the northern origin of the latter. Just why he calls the Cape Flattery Indians "these northern Aztecs" is not made quite clear. They are essentially a maritime people, differing widely in customs, habits, and methods of life from the pastoral villagers of the Southwest. The only points of parallelism between the two, advanced by the writer, are the use of ladders, blanket weaving, and rude proficiency in certain mechanical arts. He is silent as to linguistic derivations, unity of mythological beliefs, worship or ceremonials. In house architecture there is not the remotest resemblance between the structures of the Northwestern Indians and the human bee-hives of the Southwest. The communal houses of the Chinook race, as shown by Mr. Lewis H. Morgan in his "Houses and House Life of the American Aborigines," are

practically identical with the "long houses" of the Iroquois and several other tribes of American Indians. In his history of De Soto's expedition, the Gentleman of Elvas describes similar houses, built, however, of different materials, in the palisaded towns of the Mobile Indians. In this class of habitations the several families, of the same gent, lived in common.

Such was not, and is not, the mode of living among the Southern Pueblos. *Their* houses, constructed for protection against the assaults of a common enemy, are not communal houses in the sense of their occupants living together in common. They are communal by aggregation only; and, while massed together, like the nests of the mud swallow, each family has its separate apartments and its own *lares et penates*. The northern, or Asiatic, origin of the Aztecs is altogether probable, but the house architecture of the Vancouver Indians, or of the Mandans, is no proof of it. The relations existing, if any, between the northeastern tribes and the Aztecs can only be traced in well-marked similarity of dialects, customs and superstitions, The reliable, or even plausible, evidences of Aztec migrations from the north are well nigh entirely absent or not yet discovered.

In this connection we read with interest an observation of Lieut. R. S. Williamson, U. S. Topographical Engineer, in his explorations for a railroad route to the Pacific, in 1854. Upon arriving at the great Klamath Marsh, in Northern California, he says: "We soon reached a collection of Indian huts near the edge of the water. * * * * The fires were burning in front of the huts, of which there were three distinct kinds. * * * * We noticed only one of the third kind, which was apparently used as a council house. A hole, about four feet deep and ten feet square, had been excavated, and the earth heaped up around the sides. Large sticks planted in this mud wall supported a roof made of cross poles covered with earth. The entrance was by a flight of mud steps that conducted to the roof, from which a rude ladder led through a hole to the floor below."—(Explorations for a Railroad Route from the Mississippi River to the Pacific Ocean: Washington, 1857: Vol. VI, pp. 68–69.) These Klamaths are described as being wild nomadic savages. No formidable enemy impelled them to erect their habitations in the form of agglomerated cells, but here was the same *estufa*, or council-room, found in all the Pueblos, ancient or modern, of the Aztec people. Its square shape may be exceptional, but that probably was its primitive form. This characteristic, half-sunken star chamber, occurring on the direct route of immigration from the north, possibly may have been adopted by early contact with the Pueblos of the south, but may in time prove a link in the chain of evidence establishing the northern origin of the Aztecs.

J. F. SNYDER, M. D.

VIRGINIA, ILL., February 20th, 1896.

ASTRONOMICAL SYMBOLS IN AMERICA.

BY STEPHEN D. PEET.

It may seem a strange and novel idea that there were any astronomical symbols in use among the natives of America, in pre-historic times; but this is the very position we shall maintain, and what is more, we hold that there is a striking resemblance between these symbols and those of the East.

The zodiacal circles, however, do not appear in America, for these belong to an advanced stage of astronomy, that stage which intervened between mythology and chronology, the first belonging to the pre-historic age, and the second, to the historic age.

Mr. Norman Lockyer has spoken of the different stages of astronomy. In the first stage, wonder and worship were the prevalent feature; in the second, there was the application in two directions—the astrological signs, and in the formation of the calendar; in the third stage there was the actual study of the laws of the universe and the attainment of scientific knowledge. These three stages appear in Egypt and Assyria at different periods. Each of them resulting in the increase of knowledge.

In America, we have the mythologic stage represented in the various grotesque and singular pictographs of animals and lunar faces. The chronological, in the circles and numerals which are found in the calendar-stone and in the codices. These were used for the purpose of astrology, but did not advance the knowledge of the universe, this having been left for the science of astronomy to furnish to the modern nations.

Now, with these distinctions in mind, let us proceed to consider those various symbols which embodied the aboriginal ideas of astronomy.

1. It appears that there were in all historic countries astronomical symbols which divided the world into celestial spaces as well as terrestrial; the one class corresponding with the other. The sun and moon preside over the celestial, while men and animals dwelt in the terrestrial spaces; the ruling power always having the central position. In Babylonia there were four spaces surrounding a central space, all of them on a horizontal plain. In China there were nine circles—the throne of the Emperor in the centre and raised above the other circles. In Egypt there were three spaces raised above one another—the sun in one, the

moon and stars in another, and the earth in the third. These were personified and the Goddess Nut spanned the sky with her double body.

The ordinary Babylonian conceived the earth as round and immovable, a lofty mountain, resting on the abyss of the waters. In the sky there are four classes of heavenly bodies: First, the fixed stars; second, the planets, called the moving or retreating sheep; third, the comets, called the raven stars; and fourth, the meteors. Of special importance among fixed stars, are the stars of the ecliptic and zodiacal signs.

There were mountains also which guarded the horizon. Toward the east there was situated the "bright mountain," the great mountain of sunrise. In the west, "the dark mountain," the mountain of sunset. Mysterious is the north of the earth.



THE FACE OF THE SUN

This figure represents the Face of the Sun with its various symbols. A circle for the eye. A crescent for the eye brow. The rain symbol for the forehead, with the cross in the center. The Soul and Symbol—the tongue protruding from the teeth, and Star Symbols on the cheeks. Phallicor Fire Symbols below the chin. A Cloud Symbol for the hair. The whole constitutes a Death's Head. It is a Sepulchral Tablet. The stone was found near Santa Lucia Guatemala.—For description see page 181.

Beneath the mountain of the east is found the "splendid chamber," the hall of fate, which again is the assembly room of the gods. The "island of the blessed" is located on the southern horizon. Beneath the earth lay Hades, the realm of the dead, its entrance toward the west. The light and darkness, chaos and order are ever struggling, one against the other, symbolized by the flight between *Marduk*, the principal of light, and *Tiamat*,

the principal of darkness, represented as the dragon and the wicked serpent.

Above the earth, stretched the arch of the sky, the heaven of God *Anu*, the father of the gods, resting on the foundation of heaven, the horizon. Above this firmament again is the inner part of heaven, the abode of the gods, called the "sunlit home," because here the sun shone continually. The sky was divided by "ways" or "paths" of the movable stars, one of them being the ecliptic (or *Anu*-path), another, the tropic of Cancer (the *Bel*-path), and the third, the tropic of Capricorn (the *Ea*-path). On either side of the world, to the east and to the west, there were doors, through which the sun passed on his daily circuit.

In the pre-Semitic period of Chaldæa, the earth was divided into seven parallel zones encircling one another and divided by dykes or mounds; this conception was modified by the Semitic invaders, who substituted for it the division of the earth into four equal quadrants.

Beneath the mountain of the east is found the "splendid chamber," the hall of fate, which again is a part of the assembly room of the gods, where they gather at New Year, under the presidency of *Marduk* (Merodach), to determine the lot for king and country.

Now, the wonderful part of all this is, that we find the same conception of the universe, and the same divisions of the sky, the same paths in the sky, the same divisions of the earth, marked by mountains and by waters, the similar arrangement of chambers with doors, and the similar conception of the contest between light and darkness, and the same method of symbolizing in America.

Between heaven and earth, toward east and west, are the waters of the east and the waters of the west, which, like the ocean in the south, pass over into the sky while the humanized rain-bow, spanned the sky the image which represented the sun as the ruling divinity, in the centre, with the elements all about him. The revolution of the sky is also symbolized.

These constituted a map of the heavens, resembling in many respects, that which existed in the East. This division varied with the different tribes. Among the wild tribes there were only four divisions; among the Pueblos and the mountain tribes there were seven; among the civilized tribes of the Southwest there were thirteen spaces—six above and six below, and a central space.

These things were preserved in the sacred mysteries of the East and were taught by the learned priests, their deep significance, kept as a secret, which could be imparted only to the initiates. Here, also, they are in the hands of the priests or medicine men and were taught only to the initiates; and yet they

*See "The Biblical World," Vol. III, No. 1. Jan. 1894, pps. 17 and 18.

have the same shapes and the same significance as in the older lands.

2. The revolution of the sky was also symbolized by the American tribes and the same symbols were used to represent the motion as were common in the East. These were as follows: The suastika, or hooked cross; the triskilis, or curved crescent; the coiled serpent, and the ordinary coil; all of which are seen upon the engraved gorgets in the mounds and in the sand paintings of the western tribes, as well as in the sacred symbols of the civilized races.



WATER BOTTLE WITH SUN SYMBOL

We call attention to the resemblance of the crescent, the circle, the cross, the square, the wheel, the winged-figure, the bird, the serpent, the tree of life, to the four-sided figure called the cherubim, the three faces, and many other symbols which are common in the far East, but which seem to be so strange in this country. It might be maintained that some of these symbols were suggested by the operations of nature and were such as would naturally arise. But when we come to the figures

which have no resemblance to any object in nature, but resemble the symbols of the East, the question naturally arises, whether these were not transmitted through some secret order or mysterious priesthood and finally reached this remote region? This, to be sure, has been disputed and the opposite theory of parallel development is substituted for it; and yet we are constantly coming upon relics which are covered with symbols which resemble those that were so well known in historic lands. These relics are found in all parts of the country — among the mounds, among the Pueblos, and among the ruined cities.

To illustrate, a singular bottle has been described by Dr. Thomas in his report of the Mound Builders. He says, "It is in the shape of a tripod of human heads. It was found in the Hollywood Mound in Georgia; a mound in which were several hearths and many traces of fire, and skeletons which were buried near the hearths. In the same mound was the bottle shown in cut. This was beautifully painted and molded, and had upon the sides a figure of the sun with rays emanating from a circle, with a cross inside of the circle. The whole symbol was painted upon a light background making the figure to resemble a rolling, blazing sun. Another vessel in the same mound also contained the figure of a serpent, coiled around it, the body of which was marked with cross-hatchings and circles. The neck and head curved naturally. The open mouth, with protruding tongue and fangs, also very natural. The eye decorated with a circle and a figure resembling a trident."

There were shell beads and copper articles, bird pipes, and an owl pipe, found in the same mound.

Dr. Thomas says, "traces of fire were noticed above this pot and skeleton, and there seems to have been more than one ceremony attendant upon the burial of these articles."

The articles were very artistic and show much skill in decorating and molding pottery. Another relic was discovered in Nebraska, is called the Exeter Vase. This has animal and human heads arranged on each of the four sides, causing it to resemble the cherubim which were common in the East, the faces looking each way.

3. The presence of the "Stepped Figure" and the "Winged Disk" in Americ, and their resemblance to the same figures used in the East will next be considered.

It will be acknowledged that the stepped figure is very common. It may be seen in the stepped line of the Tusayan masks or head-dresses; also in the Zunis Sacred Shield Bow, in the Prayer Meal Bowl of the Tusayans, which symbolizes the Mother-earth, covered with the Arch of the Sky.

The stepped terraces of Mexican Temples were as significant of the Sacred Spaces as the successive stages of the House of the Mountain of Countries, upon whose top was placed the Shrine of Baal in Assyria. The Great

* Report of Bu. Eth., 1890-91, pp. 423.

Temple of Ur was built in three stages and commemorated the divine Triad; Amunit, the moon, Shamash, the sun, and Baal, the lord of all. At Burr's Nimrud, the seven stages representing the seven spaces or spheres, in which, according to Chaldean astronomy, moved the planets. The sun was symbolized by yellow, the moon by black, Jupiter (*Marduk*) by orange, Mars (*Margal*) by red, Venus (*Ishtar*) by pale yellow, Mercury (*Nebo*) by blue. The angles of this temple were directed to the Cardinal point, the battlements of the city of Sargon were in the shape of terraces or stepped figure, the revolving wheel decorated the wall, the one symbolizing the Sacred Spaces of the Sky, and the other the flaming orb of the Sun.

The Altar, consecrated by the Chinese, is constructed with three circular terraces, the upper terrace is paved with 81 stone disposed in circles. The adjustment of this sacred emblem, the stepped figure, to architectural ornament, was common in the East.*

In this country it is more manifest in the decoration of pottery, very many of the stepped figures being accompanied by disks to represent the sun, curves to represent the moon, coils to represent the winds, stastikas to symbolize the motion of the skys, the Maltese-cross to symbolize the stars. These were all suggestive of the "Made Being," but the spirit or soul must always have an open passage through the Sacred Spaces.

The same seems to have been embodied in the arrangement of the houses of the Pueblos, for there was always a diagonal and angular passageway between the houses of each Pueblo.

It is to be noticed in this connection, that the "winged disk" or "winged circle," is very common in America. It is found in many different forms or stages of development, and yet it constantly reminds us of the symbol which was so significant of the sun and of the nature powers to the nations of the East. We will describe here the different forms and stages with a significance given to each form.

We shall begin with the Wakinyan, or Thunder Being of the Dakotas.

There are four kinds — black, yellow, scarlet and blue. One way of representing them is to place over the eyes a line of lightning, resembling an inverted half-moon, from beneath which project two chains of lightning diverging in zig-zag lines; two plumes come out near the roots of the lightning which serve for wings.

A modified form of the winged disk is found in the shield of the priesthood of the bow. This is in the form of a circle or disc, and in the midst of the disc is a humanized bird or eagle with wings for arms; the arms extending to either side. Above the arms, or wings, is a head in the form of a disc, the proximity of the two reminding us of the winged-globe of the Egyptians. The head has two colors — black to represent night, and green to represent the day. Above the head is the turreted figure which represents the clouds, and above this is the humanized rainbow which has the shape of a crescent, the ends of which are furnished with head and legs. The ends of the crescent join

* See Masks, Heads and Faces, pp. 000.

hard upon the ends of the wings. Below the feet of the bird, or eagle-man, is the zig-zag serpent, or the lightning, and on either side of him are the two bears which represent the quarters of the sky.

In the Northwest Coast the Thunder Bird is represented with wings extended, and head erect between the wings, the pinions drooping as if the intention was to represent the clouds and rain. The figure has the same shape as the winged circle and we can readily conceive of the symbol growing out of it.

The best specimen of the winged circle is the one discovered by J. L. Stevens, at Ococingo, over the doorway of a sanctuary and which arrested his attention from its resemblance to the winged-globe of the Egyptian temples. A portion was sketched by Catherwood, the artist. Waldeck afterward copied the figure, but restored a portion of it from his own imagination.

This figure seems to have been repeated, for it is found also at Palenque and was evidently a symbol of one of the nature powers and of the Air God which was worshiped by the Mayas.

The winged-globe does not have the serpent issuing from it as we expect to see it in Egypt; nor is there a human head arising out of the globe, as we see it in Assyria and Babylonia; and yet, we find the serpent used in connection with the stairways of temples adjoining, and many statues of the divinities covered with circles and crosses, and symbolized by feather-headed serpents. We are constantly surprised at the resemblances.

Now, this association of the winged disk with the serpent and the tree in the temples and palaces of Central America may have all been accidental, or the result of nature-worship developing in parallel lines. But there are details which are very surprising. In the first place, the dividing of the façades of the palaces into separate spaces, and placing the serpent around the space, and the statue of divinity over the doors, had a significance which could not have come from nature-worship alone. The resemblance of the statue which is now in the Trocadero Museum, at Paris, described by Nadaillac, to the statue of Buddha, could not have been a mere accident. The resemblance of the peaked cap, or pyramidal crown, on the head of this seated figure to the crowns which were so common in the East, and which were so significant, is another detail which can not be ascribed to the common law of development. The radiated crowns of the heads of all the Avatars, ornamented with serpents, decked the statues of India. Siderial animals are sculptured near them, vases for oblation, and consecrated bells are in the hands of the statues.

A serpent was adored in Egypt as the emblem of divine nature. All the deities in Salsette and Elephanta, either grasp serpents in their hands or are environed with them, which can only be intended as a mark of their divinity. Their wreathed bodies, in its hieroglyphic sculpture, represented the oblique course of the stars, while the same bodies, formed into a circle, were an emblem of eternity; and it will be remembered, that the serpent was one of the most conspicuous of the forty-eight great constellations, into which the ancients divided the visible heavens. On those cornices too, in embossed work, are seen very conspicuous figures of horses, elephants, and lions, three of the most distinguished constellations of the Hindoos.

* See Second Annual Report, pp. 40; see also, Chapter on Animal Worship pp. 118, Fig. 2, in "Myths and Symbols."

* See Bancroft's "Native Races," pp. 351.

Symbolic animals, probably, in the ancient mythological system, represented the renowned hero-deities of India in the same manner as in Egypt the god Horus was recognized in Orion, Anubis in Sirius, or the Dog-star, Typho in Ursa Major, or the Bear, and Nephthe in Draco; or the Dragon.

Serpents are sculptured on the cornices surrounding the roofs of the caverns of Elephanta, as they are sculptured in embossed work in the palaces of Chichen Itza of Central America. The rabbit, which constantly ornaments the facade of the same palace is a symbol of the moon in India, which animal is seen in the right hand of the images of Seeva, and which are so common in the pagodas.

The Persians had two ways of representing the sun. The one under the form of a young man, denominated Mithras; the other in the similitude of a human face, radiated. The Persian Mithras was winged and covered with other astronomical symbols.

The serpent, *Asooke*, whose enormous body enfolded the globe, is no other than the celestial serpent whose influence is represented in all oriental systems of astrology to be so great.

The representation of time and its various parts by symbolical figures is very common among the astronomers of the East.

The mysteries of both Osiris and Mithra are only copies of the ancient worship of the solar fire which originally was adored in Chaldea as the purest symbol of deity. Osiris symbolized the solar sphere; Isis, the lunar orb, or some think, the terrestrial globe, made fruitful by his generative warmth.

The Indian name of the moon is Chandra. He is represented as a deity, sitting in a chair, drawn by two antelopes, and holding in his hand a rabbit.

4: A singular representation of astronomical symbols is found in Central America. Here the sun and moon appear as gods with human faces, and surrounded by animals and plants, which are placed in the sky where they rule and direct the affairs of the earth. They may be gods of the seasons or the personified "nature powers." (See plate; also fig. on page 175.)

This is illustrated by the remarkable tablets which were discovered by M. Habel, in Cosumalahuapa. These tablets were covered with images, which seemed to be personifications of the sun and moon. At the same time, they represent the attitudes of the worshippers, and even symbolized their prayers.

The following is a description of one of the tablets, or sculptured stones:

This is a block of dark grey porphyry (*vulcanite*), twelve feet long, three feet broad, and two feet thick, the upper left corner of which is slightly broken off. The sculpture occupies nine feet of its upper part. The upper portion represents the head and breast of a female, surrounded by a circle, from which the arms project. Besides the stereotyped frill surrounding the forehead, the only ornament of the head consists of two entwined rattlesnakes. The hair is of medium length, and descends in tresses to the shoulders and breast. The ear is ornamented with circular disks, inclosing smaller ones. Around the neck is a broad necklace of irregularly-shaped stones of extraordinary size. Below the necklace, the breast is covered with a kind of scarf of textile fabric, the upper ends of which are fastened by buttons. To the centre of this scarf seems to be attached a globe, the upper part of which is adorned by a knotted band, from which four others ascend. From the lower part of the globe descends another band, with incisions characteristic of Mexican sculpture, while its sides are adorned by

*See "Indian Antiquities," by Maurice, Vol. II, pps. 192 and 193.

*See Vol. II, pp. 270, Maurice's "Antiquities."

*See Maurice's Indian Antiquities, Vol. II, page 192.

wreath-like wings. The wrists of both hands are covered with strings of large stones perforated in the centre. From the semi-circular bands emanate two of the twining staves; to the staves are attached knots, leaves, flowers, and various other emblems of a mythical character. The most conspicuous of these is the representation of a human face in a circle, resembling the ordinary pictures of the full moon. The two central staves, originating from the neck, pass downward, and are differently ornamented. The fact that the head and part of the breast are surrounded by a circle, and that the image of the moon forms one of its ornaments, induces us to believe that this is the figure of the Moon-Goddess. In the lower part of the sculpture appears again an individual imploring the deity, with face upturned and elevated hand. The supplication is indicated by a curved staff knotted on the sides. Excepting a circular disk attached to the hair, the head is without ornament, the long hair hangs down to the breast and back, ending in a complicated ornament extending below the knees. In the lobe of the ear is a small ring, from which a larger one depends. The breast is adorned with a globe similar to that on the breast of the goddess, only it is smaller. Around the wrist of the right hand is a plain cuff, while the left hand is covered by a skull; a stiff girdle, with a boar's head ornamenting its back part, surrounds the waist. This girdle differs from the previous one by being ornamented with circular depressions. From the front of the girdle descends two twisted cords, surrounding the thigh, and a band tied in bow and ends. Below the right knee is a kind of garter, with a pear-shaped pendant. The left foot, with the exception of the toes, is inclosed in a sort of shoe.

In front of the adorer is a small altar, the cover of which has incisions similar to those in the pendant of the globe in the breast of the deity. On the altar is a head, from the mouth of which issues a curved staff, while other staves, in the shape of arrows, appear on the side of the head.*

The personification of the moon as one of the nature powers is very plain in this plate. It seems remarkable that the double serpent should have been selected for a head-dress, but this is in accord with the symbolism of the region, for the serpent is a personification of the rain or some other nature power. The disk, the cross, and the stepped figure below the disk are also significant, for these symbolize the sun, the points of the compass, and the clouds.

M. Habel has described another sculptured block, which represents the sun, or one of the nature powers personified, beneath which is a person adoring:

The sole ornaments of the head consist of staves winding in different directions, the bearers of the deity's mandates, expressed in picture language. From the ears depend large rings; the hair hangs down in a braid on either side of the head; a single row of disks adorn the neck; both wrists are covered by bracelets, consisting of four rows of quadrangular stones. From the neck emanate two staves, bearing nodes, buds and other figures, which arise and divide the upper part of the stone into triangular spaces, which are embellished by the leaves, buds and other ornaments.

These triangles seem to be mystic signs for a religious expression, the same as the winding staves. On the left shoulder of the deity is a sheaf of the leaves of the maize, from which emblems we conclude that this figure is the god of fertility. The head of the person standing beneath, with face upturned, is ornamented with a frill, a kind of helmet, with a disk and three peaks. To the top of this trident-like helmet is attached a large tuft of plumes and an ornamented tassel. From the head, and over the shoulders of the person, the loose hair floats down the back, and to this the skin of an animal, resembling a tiger, is attached. The right wrist is covered with a

*The Sculptures of Santa Lucia, Cosumalahuapa, by S. Habel, M. D., page 70.



THE MOON GOD
SURROUNDED BY ASTRONOMICAL SYMBOLS



THE SUN GOD
THE SUN PERSONIFIED AS THE GOD OF VEGETATION

wristlet, while the skull of a wild animal serves as a gauntlet to the left hand. This seems to indicate that not only human beings, but animals were offered as sacrifices. The waist is encircled by a stiffened girdle, on the back of which appears the head of a wild animal. From the waist ascends curved lines, seeming to indicate the feelings of the individuals, not by language, but by aspirations. The right foot is protected by a thick sole, and behind the right leg leans a short spade-like weapon, with a cross piece like the handle of a spade. From the mouth ascends a winding staff with nodes, which expresses in cipher the prayer of the individual.*

This sculptured block also suggests the god of fertility as being implored by a priest, and appeased by human sacrifice.

It appears from these figures that the moon and the sun were both regarded as presiding over nature, etc. The sun was the source of life, but the moon was also a companion. The two together brought about the changes of the seasons, as well as regulated the astronomical powers.

There is no doubt but that in America the sun and moon, or both, were regarded as the source of life. This is abundantly illustrated by the many pictographs, as well as by the sculptured tablets; for the commonest scene is where a divinity above is furnished with the symbols of the crops and the seasons, and the offerings and prayers are evidently for a blessing on the crops.

The Codices are full of such representations. Sometimes the sun is represented with the blazing face; the moon, by a face that is partly light and partly dark. Both are personified, and have names given to them.

5. This conception is not confined to the civilized tribes, for the tribes of the Far West — the Zunis, Moquis, Navajos and Pimas have many pictographs and symbolic figures, in which the various forms of vegetation and the course of the seasons are supposed to be under the direction of "sky gods" and the mountain divinities, and the very motion of the earth and of the sky is symbolized by them.

They do not seem to have used the crescent, or circle, though they have a great number of symbols. These symbols they embodied in their sand paintings, inscribed upon the rocks, wove them in their garments, painted them upon their idols, and even represented them in their sacred dramas and religious dances. Their divinities, however, were the nature powers — such as the rain, the lightning, the clouds. They were supposed to dwell either in the mountains, in the lakes, rivers, caves, four parts of the sky, or distant places. But the sun and the moon and the heavenly bodies were apparently subordinate, and were rarely symbolized. This will account for the fact that the crescent and the circle appear so seldom, and that the stepped figures, the winged figures, the rainbows, and the symbols of the rain cloud were so numerous. There are but few myths which relate to the sun or moon among this people, but there are many myths about the animals and the mountain divinities. The

*The Sculptures of Santa Lucia, Cosumalahuapa, by S. Habel, M. D., page 72.

sacred dramas represent the motions of the rain clouds and the importance of water, especially in relation to the growth of the maize and other plants. Even the celebrated snake-dance is nothing but a sacred drama, which embodied a prayer for rain. The dances and dramas were regulated by watching the position of the Pleiades in the sky, and were not commenced until they reached the zenith. The Morning Star was also waited for. Many of the dances commenced at dawn. It seems singular that with all this deifying of the clouds, the winds, the rainbows and lightnings, there should not have been, also, a deifying of the sun and moon. There was, to be sure, a crescent always present in the sand paintings, in the shape of a humanized rainbow, and below this was the winged figure, which had the terraced cap and the parti-colored face, and was furnished with symbols of the nature powers, the serpent for the lightning, the cross for the four points of the compass, the arch for the sky, feathers for the clouds, were symbols which bore important parts of mountain worship and elemental worship, as well as in sun worship. The feathered-headed serpent was a common symbol, but it signified the rain cloud. In fact the Serpent Cult took the place of the Lunar Cult, and was the ruling factor in this religion.

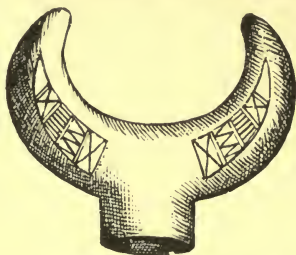
It is noticeable that the snake dances were more abundant among the Western tribes than among the Eastern; and yet, among these latter there were certain dances which symbolized the opening of the season in the spring-time under the figure of a snake. One such dance has been described as existing among the Abenakis in Maine. In this the dancers dramatize the coiling and uncoiling of the snake. The lines of dancers move around the one at the head, forward and backward, several times, making the entire dance to symbolize the movement of the snake itself, and the number of the dances to symbolize the progress of the season and the number of the months.

Let us call attention to the distribution of the crescent and the significance of the symbol in Oriental lands.

The Brahmans, the Persians, the Druids, the Chinese and the ancient Acadians, as well as Egyptians and Assyrians, used the crescent, as well as the cross and the circle, as symbols of divinity. Siva is decorated with the crescent, and is called "the god with the crescent at Benares." He constantly bears in his hands the vase, which is the emblem of the solar fire. Isis bore on her head the lunar crescent, and the Greeks, imitating the Egyptians, placed the crescent on the head of Diana. The Druid priests carried in their hands a crescent of gold or silver, or they bore aloft banners which glittered with the same ornament. They wore it on their garments, and made their processions through the amphitheatres of stones, which were in the shape of circles and crescents, and were temples to the moon and to the sun. On the ancient coins there are circles, decorated with

round balls and rings, pierced like the disk. The ancient sculptures and pictures represent the Brahma as furnished with four hands, one of which is decorated with the circle, and the Brahman priests, in their rites of magic, carried sacred wands, which were decorated with the same symbol. The rod, or caduceus, of Hermes was an Asiatic symbol, which was borrowed from the Mithriac Mysteries, and was intertwined with serpents, and represented the Solar and Lunar Cult combined.*

We imagine that the trident of Neptune and the crescent which was borne by the Romans, and is still carried by the Mohammedans, was derived from the same source.



CRESCENT, FROM THE LAKE DWELLINGS OF EUROPE

6. This brings us to the subject of the calendar-stone and to the significance of its various symbols. On this subject there is a difference of opinion, for some archæologists hold that the calendar was only a chart, used for the recording of historical events — a sort of commemorative tablet. Others hold that it was full of astronomical symbols, that it contained the history of the Story of Creation in its central circle, but widened out to the cycles of indefinite length, taking in vast astronomical periods. Dr. J. J. Valentini is the advocate of the first theory and Dr. D. G. Brinton of the last, the two representing the different schools of archæology which existed in Europe as well as in this country.

Dr. Valentini holds that the hieroglyphics on the left hand tablet of the cross, at Palenque, contains the history of the Order of Priesthood, with the portraits of the priests. The second tablet contains the record of the priest who lies buried beneath the cross. He holds that the calendar-stone contained a record of a line of kings, which goes back to a particular date before the time of conquest. Dr. Brinton, on the other hand, following the lead of Forstermann and others, holds that the calendar-stone was full of astronomical symbols.

The same diversity of opinion exists as to the interpretation of the various codices — such as the Codex Troano, the Dresden Codex, the Codex Peresianus, the Tableau des Bacab, all of which contain the same symbols of the Serpent, Tree of Life, Circle, Animal Heads, Bird's Heads and other symbols.

* Maurice's Indian Antiquities, Vol. VI.

Dr. Thomas thinks that these Codices contain pictures which are significant of the nature powers, but that the hieroglyphics are phonetic. Dr. Valentini's opinion would be that they were all pictographs, but his theory is that their historic events are on record; whereas, the probability is that the Codices were used as a calendar for religious feasts, and were significant of the operations of the nature powers. We are to call attention here to the similarity between the calendar-stone and the Codices, and to the symbols which are contained in them all. It will be noticed that the stone is covered with a series of circles, in the centre of all is the face of the sun, and outside of this are four pictographs, and outside of this, the circle containing the pictographs, which represents the days of the month. Next to this are numerals, or dots, which represent the 260 days of the lunar year. Outside of this is a circle filled with grains of corn, the next is filled with houses, clouds and rain. Outside of all is the serpent.

The following is the interpretation given by Phillip J. J. Valentini of the different figures :

A face looks out from the centre, decorated with a neck chain, ear-rings, and a lip stone, set with jewels, hanging from the under lip; the forehead surrounded by a fillet, with two large jewels, and in the middle is a hieroglyphic symbol. The eye-sockets are sunken, and deep wrinkles appear upon the forehead and cheeks. For the sun, as creator, the giver of life, the divider of time, is the oldest being that ever existed.

In the space outside of the sun symbol there are four tablets, or squares, grouped around the head of the sun-god. These represent the great cosmogonic epochs of creation, but symbolize them by conventional figures. "Four" was the sacred number, and symbolized the four periods of creation, as well as the four points of the compass and the four elements. The elements were also symbolized by other objects. There were four destructions of the world — one by fire, another by wind, another by water, and another by earthquakes.

The story is that two persons, a man and a woman, the one Coxcox and the other Xochiquetzal by name, saved themselves from a great flood, in a boat, and landed on the top of a mountain. The vulture came with a bone in his beak, which signified that the destruction of the world was still going on. After a while came a humming-bird with a flower in his beak. This was a sign that things were growing upon the earth.

This same story is symbolized by the tablet which is below the face of the sun and to the right of the symbol of the tower, or wind. In it we see a tub of standing water, four drops springing out of it, a crocodile, king of the river, above the tub; and in the midst of the tablet, surrounded by figures which expressed abundance of water, the profile of a man with a fillet, and a smaller one of a woman. The whole represents the destruction of the world by water, and reminds us, forcibly, of the story of the deluge which is described in the Scriptures.

The same event was symbolized by the picture-writings of the Aztecs, by the picture of a mountain peak rising out of water, and the heads of a man and woman, wearing a pheasant and a flower. In the foreground a boat, with the naked men in it.

Dr. Valentini says: "Nothing has led more strongly to the supposition that there might exist a connection between the Americas and the Orient than this."

The circle which surrounds the tablet which contained the Story of Creation is supposed to represent the real month. It is full of the symbols of the days of the month, each day represented by a pictograph. These same symbols, or pictographs, are also found in the Codices and in the tablets, sometimes arranged in squares and sometimes in circles. In one circle the symbols are arranged so as to represent the sub-divisions, which are called lustrums, the month being divided into four lustrums repeated five times, which equalled twenty. In the calendee a space is given to each day, and the wheel brings the months in their order.

The first day is *Cipac*; the second, *Etheacatl*, wind or crocodile; the third is *Calli*; a house; the fourth is a lizard, *Quetzpalin*; the fifth is a serpent, *Cohuatl*; the sixth is a skull, *Miquitzli*; the seventh, a stag, *Matzatl*; the eighth, a rabbit, *Tochtli*; the ninth is water, *Atl*; the tenth is a hound, *Izcuintli*; the eleventh is a monkey, *Ozomatli*; the twelfth is a creeping plant over a skull, *Malinalli*; the thirteenth is a reed, *Acatl*; the fourteenth is a tiger, *Ocelotl*; the fifteenth a vulture, *Cozcaquauhtli*; the sixteenth, the eagle, *Quauhtli*; the seventeenth, a shield — the great shield of the world, *Ollin*; the eighteenth, the sacrificial knife, *Tecpatl*; the nineteenth, the god of rain, *Quiahuatl*; the twentieth, a flower, a tub, kernel of corn, *Xochitl*.

With these twenty representations of days, the unity of the full month is expressed.

The most interesting part of the stone is the one which forms the border. It is composed of two feather-headed snakes, each snake divided into thirteen parts, and each part containing a fire symbol, the two snakes having a symbol near the tail, which represents the binding together of the years, making the fifty-two years, or the cycle.

The explanation is as follows: "The ancient Mexicans had a superstition that the sun-god would destroy the world at the end of the fifty-second year. As a result, they offered to him their greatest sacrifices. They extinguished their fires, but lighted them again by fire which was received from heaven. A victim was found for sacrifice, and the fire generator was placed upon his body while it was still palpitating, with the heart torn out."

New fire was produced by friction. We find this custom in the Continent of Asia, where the worship of the sun prevails.

There was a periodical reproduction of sacred fire, as there was all over this continent. The symbol on the serpent represents the shaft, or stick, which was twirled round and round, and produced the sacred spark by friction. The volutes on either side, are the smoke arising therefrom, made red by the reflection



CALENDAR STONE

1. Face of the Sun with head-bands, hair braids and labret.
2. Cosmogonic Tablets symbolizing the four creations.
3. Symbols of the Inter-galaxy Days.
4. Calendar Circle symbolizing days of the month.
5. Lunar Circle symbolizing the 260 days of the sacred year.
6. Solar Circle symbolizing the supplement days of the Solar year.
7. The Pointers, which symbolize the eight points of the compass.
8. The Celestial Circle with Cloud Symbols, representing the four Lustrums of five days each.—20 days.
9. The Universe Circle with the two Serpents, 13 Fire Symbols, 4 Knots or Bands signifying the binding of the 52 years.
10. The Tablet containing the Fire Symbol and 13 dots, symbolizing the Great Cycle.

of the kindled flame. There are twelve of these fire symbols, but the symbol of the binding up of the years covers the thirteenth. This symbol is made up of four ribbons, with a knot across them. The whole serpent, with its divisions and its fire symbols and ribbons, symbolize the cycle of 52 years, which was divided into four parts of thirteen years each.

ETHNOGRAPHIC NOTES.

BY ALBERT S. GATSCHET, WASHINGTON.

FATHER A. G. MORICE, of the Order of Mary Immaculate, is the author of a *Carrier Reading Book*, published at Stuarts' Lake Mission, British Columbia. The second edition has appeared in 1894, in the syllabic characters invented by Morice in the latter part of 1885, and holds 192 duodecimo pages. The contents are chiefly devotional. The introduction of the Cree or Knistino syllabic characters had proved a failure in transcribing Carrier on account of the great difference of sounds in both languages, the Carrier or Taculli being of the Tinné family of languages. But the syllabary of Morice, being richer in signs, proved to be adequate to all the needs of missionaries or translators in rendering the language phonetically as faithfully as possible. Individuals of any of the Déné tribes will learn with great facility to read Déné or Tinné texts when printed or even written with this syllabary, but Selish and Chinook dialects will not be transcribed with ease by means of Morice's system.

THE SACRED POLE of the Omaha Indians was placed for safe keeping in the Museum at Harvard University, Cambridge, Mass., in 1888, and the contents of the two sacred tents of war of that famous tribe were transmitted there four years earlier. These objects are now saved from destruction (it was once intended to bury them with the chiefs charged with their keeping), and form a group of highly interesting relics. Miss Alice C. Fletcher, to whose zeal the preservation of the pole and the other articles is mainly due, gives their legend in an article read before the American Association for the Advancement of Science, 1895, pp. 270-280. A large amount of Omaha mythology is clustering around these relics, and requires attentive reading for its full comprehension. In Omaha and Ponka the sacred pole is called *wa-ghdhe-ghe*, which means, expressed in a circumscriptive manner, "what has the power to place the mark of honor upon the daughter of a chief." The same volume also contains an article of the same author—*Indian Songs and Music*. In this field of research Miss Fletcher has advanced our knowledge more than anybody else, as is fully attested by her monograph, "A Study of Omaha Indian Music" (Peabody Mus. Publications), which was well received by the critical press of America as well as of Europe.

A STUDY OF LONG ISLAND local history is William Wallace Tooker's monograph, published by Francis P. Harper, New York, 1896, octavo (pp. 8 and 60): *John Eliot's* first Indian teacher and interpreter, "Cockenoe-de-Long-Island, and the story of his career from the early records." The frontispiece gives an engraving of Indian graves on Montauk promontory. Cockenoe was a young Indian who went east and helped Rev. John Eliot in the earliest of his endeavors to write down the Massachussetts Indian dialect. In 1646 Mr. Eliot first preached in Indian, and shortly after Cockenoe appears as his interpreter. Indeed one of the significations of this verb *kukkinneau* is that of "he interprets." The last documentary mention of him is dated August 3, 1687, in the Montauk deed of conveyance to the inhabitants of East Hampton, L. I.

THE CREEK WAR of 1813 and 1814 has been a frequent object of historical description. Meek, Pickett, Drake, Claiborne, Woodward and many others have, with industry and perseverance, tried to obtain all information on this fearful struggle which it was possible for them to obtain. They represented the events with all the art and skill they were capable of. When Woodward published his "Reminiscences" (1859), there were still alive a number of people, Indians and whites, who had taken part in the war, and even the latest book on the subject, "The Creek War of 1813 and 1814," by H. S. Halbert and T. H. Ball, avails itself of unpublished materials, most of which have come down to our times in the form of manuscripts (Chicago: Donohue and Henneberry, 1895, pp. 331, 12 mo.). The historic narrative of these authors is attractive, more circumstantial than that of their predecessors, and full of new statements never before published. Particular attention is paid to the causes and origin of the war, which was instigated through the British, especially by the agency of the celebrated Tecumseh, chief of the Shawnees, who was full of hatred against the American settlers in the border states.

DR. NICHOLAS LEÓN is one of the few Mexican scientists who constantly remain active in the dissemination of knowledge of the Indian antiquities, folk-lore, customs, and native languages of that interesting, but too little explored country. He has republished several manuals, catechisms and dictionaries of the Tarasca, Zapotec and other native languages, also the "Museo Michoacano," or periodical for the study mainly of the Tarascan people and tongue. Just now the first installment has reached this office of his "Diccionario popular y manual de historia antigua de Mexico," in sedecimo size, and in two columns of Spanish text. This specimen copy contains the biography of the Mexican "Emperor" Ahuizotl, the eighth ruler of Tenochtitlan, whose rule began in the year 1846. Illustrated articles are to follow on ethnography, anthropology, languages and on other cognate subjects. Dr. León's residence is in Guadalupe-Hidalgo, Federal District of Mexico, *Mexico*, and to that locality orders for his publications may be addressed.

DR. PHILIPP J. J. VALENTINI has recently published Part II of his "Analysis of the Pictorial Text Inscribed on two Palenque Tablets" in the Proceedings of the American Antiquarian Society (Worcester, 1896). In the first part the author had endeavored to prove that in these two Palenque tablets no images comparable to alphabetic characters were found forming the components of the engraved text, for the 201 images on them turned out to be true *pictographs* of natural or manufactured objects. They are of a ritual character. Now Part II attempts to ascertain what special message these two tablets were intended to deliver to posterity. Quite a number of calendar dates are registered on one tablet, and Dr. Valentini finds that they amount to forty-seven, and occupy nearly one-half of all the squares into which the tablet is divided. Tablet I is subdivided by spaces showing the records of several persons, but the long and uninterrupted record of Tablet II has to be assigned to but one person, and is the record of the priest entombed in the locality. The two tablets are reproduced pictorially in the first part of Valentini's article, and a comprehensive account of all the three tablets was in 1879 composed by Charles Rau, then the archæologist of the Smithsonian Institution.

HENRY PITTIER, a native of Switzerland (southwestern part), who is the director and one of the most active teachers in the Instituto fisco-geografico at San José, Costa Rica, has published many useful researches on his adoptive country (travels, topography, Indian linguistics, history, etc.), all of which were printed at San José at public expense. His travels and documentary studies furnished many interesting data for the work he is issuing just now, "Geographic Names of Costa Rica." The first volume deals with the Talamanca district only, holds 46 octavo pages, and explains, or attempts to explain, about 300 local names of that distant country. Most of them belong to the Indian languages spoken at the present time in that province, and it has been ascertained that all Indian dialects of Costa Rica belong to *one* family only.

THE KARIRI LANGUAGE belongs to the mountains of Northern Brazil, and in former times when the Portuguese settled in these parts, the Cairiris or Kiriris with the two sub-tribes of the Sabujás and Pimenteiras were living in the mountainous ridges between the River San Francisco and the Rivers Curú and Acaracú on the north. The nation possesses no common name, and the explorer Philip Martius, who in 1818 heard that about 600 individuals were still in existence, believes that the stock of the nation once came from the unexplored interior of the Guyana highlands. From Mami-ani, a missionary of the seventeenth century, we possess a grammar and a catechism (Lisbon 1698, 12 mo.). Another catechism, by R. P. Bernardo de Nantes, was published first in Lisbon in 1709. He was a Capuchin monk and his works are now exceedingly rare, as appears from the preface of Dr. Julius Platzmann's fac-simile edition, which this indefatigable linguist has just made public in the original duodecimo size: "Catecismo da lingua Kariris, composto pelo R. P. Fray Bernardo de Nantes; publicado de novo por Julio Platzmann. Leipzig, B. G. Teubner, 1896. pp. 363." This reimpression may be called a model of modern typography; from it the language of the Kariri, which was also that of the Sabujá, appears to have had vocalic endings in its words, many difficult consonantic articulations and a structure, which was not polysynthetic to excess. The Portuguese translation stands opposite the Kariri text on every page, which makes the analysis of the sentences possible without a dictionary. This group of mountain dialects form a linguistic family by itself, and the attempts to connect it with the Tupi family have not been successful.

THE PUBLICATIONS OF DR. RODOLFO LENZ, professor of the Pedagogic Institute of Chile, have, since our last notice of them, considerably increased in number. They all refer to languages spoken by the Chilean Indians, especially with dialects of the Arauco family. Thus we have: "Introduccion a los estudios araucanos (grammatic elements of the Araucan language, and a letter of Padre Febres, pp. 51). Glosario de la lingua Atacameña—the beginning of the dictionary of a language spoken near and in the desert of Atacama, to the north of Chile. The Atacameño was long supposed to be a language not affiliated to any other, but apparently there is a genealogical connection with one of the northern stocks of South American languages. Dialogos araucanos en dialecto huilliche; 371 sentences with interlinear translation by R. Lenz, pp. 35. Der Ausbruch des Vulcans Calbuco; a short relation of that event, in an Araucanian dialect,

with interlinear translation in German, and some remarks in form of a commentary. *Dialogos araucanos en dialecto picunche*, with Spanish interlinear translation, and commentary, pp. 60."

All these articles were printed in Santiago de Chile, 1895 to 1896, in uniform large octavo size; some in the *Añales de la Universidad de Chile*, others in the *Transactions of the German Scientific Society in Santiago*.

NEW GUSLAR SONGS.—The latest of the Guslar or Slavic troubadour songs published in the Slavonic dialect of the middle Danube River is of Moslimic, not of Christian origin, its title being, "*Bojagic Alile's Glück und Grab*." The learned editor, Dr. Friedrich S. Krauss, of Vienna, has published it in *Schmeltz's Internationales Archiv für Ethnographie*, Vol. IX, pp. 1-41 (Leiden, E. J. Brill, 1896), adding a German translation in the metre of the original and a commentary. Everybody who reads these two texts will assume that they were the product of one poet, but the editor positively states that they come from two different authors. The manner in which they are joined together proved conclusively that by a proceeding of this sort whole epic poems of any length can be formed, as we see it in the Homeric poems and in the *Kalevala*. The Moslem nobleman *Bojagic* has heard of the consummate beauty of the daughter of the commander of *Karlstadt* [Transsylvania], and is slain in the attempt to abduct her. The title of the first Guslar song is "*Halilen's Brautfahrt*," relating the criminal abduction of the girl and the massacre of her Moslemic lover, while the second song, "*Halilens' Grab*," describes the nightly desecration of the nobleman's grave in that melancholic and touching strain for which the poetry of all Slavic nations are so well known.

Three other Guslar songs worded in the same dialect, edited and translated into German by Dr. F. Krauss at the same time as the *Bojagic* song previously mentioned, have reference to the wars and expeditions made by Bavarian armies into the southern Slavonic countries east of Bavaria. The first song celebrates the Turkish attacks upon Vienna, the capital, and was brought to paper by Krauss in December 1884; the second, on the death of the Bavarian King, noted at *Lubovija* in February 1885. The third is a ceremonial chant upon the wedding of the commander (ban) of Munich; Krauss wrote it down in January 1885 from the dictation of a Catholic named *Hija Hercegovac*. Published in *Reinhard-Stöttner's "Bavarian Researches,"* vol. IV; 1896.

THE GLOBUS, a German illustrated weekly periodical, published at Braunschweig by the veteran geographer, Dr. Richard Andree, and devoted to ethnography, geology, prehistorics and travels, as well as to archaeology and natural sciences, has begun its 69th volume on January 1st, 1896 (one volume semi-annually). The periodical was founded 1862 by Karl Andree, and in 1894 was united with "*Ausland*," the tendency of which was closely allied to that of the "*Globus*." In this age of advanced progress in all human endeavors, "*Globus*" is certainly one of the foremost magazines, and if some of its articles should appear too erudite to some of its critical readers, there are others which appeal to the popular mind, and can be understood by any one whose education has not been totally neglected. In geography, African exploration, in which everybody's attention is now engaged, has been treated in a large number of articles and graphically represented by photographs, many of Dr. Andree's cor-

respondents being *explorers* themselves. In Vol. 67 (January to June, 1895,) *North and South America* were spoken of in numerous articles by authors like Dr. Sapper, Steffens, Greim, Kobelt, Emil Schmidt, W. J. Hoffman, von Ihering, Hauthal, K. von den Steinen, Polakowski. These well-known authors have written on — Researches on Mount Elias, Statistics of the Colored Race in the United States, Inquiries on Indian Anthropology, Superstitions in the Southern States, the Free Communities of Indians within the Peninsula of Yucatan (with map), the Tonanamatl, Crossing of Puerto Rico, the Climate of Ceará in Brazil, the Stone Age in Paraguay, the Araucanians in their present condition, Emigration from Java to Venezuela, etc.

"CONTRIBUTIONS TO ANTHROPOLOGY FROM AN ETHNIC STANDPOINT" is the title of a recent publication of Prof. Dr. Adolf Bastian, Director of the Ethnologic Department of the Berlin Royal Museums, published in two sections and illustrated. (Berlin : Reimer, publisher, 1895 ; octavo, pp. 170 and 149, with prefaces). The work is written in German, the title being : "Zur Lehre vom Menschen in ethnischer Anthropologie." The author gives a sketch of the various oriental notions on the conception of the deity, of demons, of tutelary genii, resurrection of body and soul, the various opinions about the abode of the soul after decease, the difference established between the soul of the living and the dead ; also, definitions of the plant-soul or life-principle in vegetals. The author is fond of using the parenthesis in the finishing of his sentences, but this habit creates a peculiar difficulty for the comprehension of his ideas. Numerous examples are brought together from all parts of the known world, more especially from Oceanica and the east coast of Asia and Mexico, many being brought in in the aboriginal languages and confronted with the dictums of the wise men of Rome, Greece and the Orient.

THE SEARCHER, an American "Notes and Queries," is the octavo periodical which is now published to replace the old "American Notes and Queries." Its publisher and editor has remained the same : A. Estoclet, 619 Walnut Street, Philadelphia, Pa. It is issued semi-monthly and the yearly subscription is \$2.00. The contents are as multifarious and interesting as ever, and if any one has any literary, historical or linguistic points to elucidate, on which he wants more information, this sheet is the best means to make one's wants known. The latest number of the New Series just published is No. 14 of Vol. I, which corresponds to Vol. X, No. 14 of the Old Series.

BOOK REVIEWS.

Names and their Histories. Alphabetically arranged as a Handbook of Historical Geography and Topographical Nomenclature. By Isaac Taylor, M. A., LL. D., Canon of York. 1 Vol. pp. 392. London, 1896. (Rivington, Percival & Co.).

Canon Taylor is well known among English writers both for the fertility of his pen and the astonishingly wide reading his works display. The present volume shows the latter trait to advantage. It is by no means to be placed in the category of the numerous pieces of literary hack-work with which the market is flooded, but is the outcome of long study and ripe scholarship. It is divided into a prologue of 35 pages, treating of the etymology of local names; a glossary of such names from all parts of the world, numbering about 5,000; an appendix in seven sections, dealing respectively with local names in the East Indian dialects, the Turkish, Magyar, Slavonic and German languages, and French and English village names, closing with a bibliography of the general subject. This will indicate the extent of ground covered by the plan, and in all parts the labor expended has been conscientious. As a convenient work of reference on the subject, there is none better in our language.

One naturally turns to the local names of his own country first, and in America we must be prepared to make large allowances, for our peculiar names are generally from the native tongues and often most obscure. Still, it is slightly disappointing to find Kentucky explained as "The Bloody Ground." Such examples are, however, rare, and the American student as well as others, will generally be satisfied with the accuracy exhibited in the derivations.

The Primary Factors of Organic Evolution. By E. D. Cope, Ph. D., Member of the U. S. National Academy of Sciences, Professor of Zoölogy and Comparative Anatomy in the University of Penn. Chicago, The Open Court Publishing Co.; (London, 17 Johnson's Court, Fleet Street, E. C.). 1896.

The facts and theories contained in this book will interest the zoölogists, and, to a certain extent, the geologists. But the portion which will most interest the anthropologist is contained in the second chapter. The topic treated is, according to the title, General Phylogeny, which means in reality, the genealogy of plants, animals and man. The general topic of the book is Organic Evolution. It begins with the chapter on Variation, and ends with chapters on Heredity and the Function of Consciousness; but the book is so full of technical terms and is so minute in its illustrations that the ordinary reader finds it difficult to follow the author. In this chapter, however, the reasoning is clear and the language simple enough to be understood.

The following is a summary of the argument : "The study of philogeny shows that the evolution of life forms has been from the simple to the complex, and from the generalized to the specialized in an ascending scale, which has not been prevented by the occasional degeneracy of parts." "Both animals and plants have a common origin, and are not distinguishable at first by any sharp line of demarcation." "The capacity for motion so general in animals is present in the earlier stages of certain plants, especially the Algæ." "The distinction between the lower animals and plants is, however, that the former introduce their food at a definite point of the body, while plants absorb theirs at all points." "The progress in plants is seen chiefly in the modification of the methods of reproduction." "In the simplest plants there is no sexuality." "In the next stage sexual conjugation is necessary, but the sexes do not differ." "In the third stage the sex is distinct, for there are male and female germ cells."

"In the animal kingdom, as with plants, we commence with non-sexual forms (Protozoa)." "In the second grade a distinct digestive chamber appears, but no organs of nutrition and reproduction are visible. "There are five succeeding classes—the Echinodermata, Vermes, Mollusca, Arthropoda and Vertebrata. In the first, the form seems inclined to be radiated ; in the second, the form is composed of rings ; in the third it is sac-like ; in the fourth, the body is segmented and limbs are present, but no internal skeleton ; in the fifth, the body is longitudinally segmented, has a nervous axis and an internal skeleton." "The two series present a history which is very different, as the animals have an increased mobility and control over environment. Sensibility through the nervous system increases, and the, highest development is that of emotion and intelligence." "The plant in no case reaches these higher stages, there having been an arrested development of these qualities."

The geological history of plants and animals is better known than the embryonic history."

The following may be regarded as the geologic history of the plants : "The Algæ appear in the Siluric, the (Coniferæ) Phaenogamia, the (Lycopodia and Ferns) Gymnosperma in the Carboniferous, the Angiosperma and Polypetalous forms in the Cretaceous." The genealogical history of animals is about as follows : "The Protozoa appear in the Archæan rocks in the Huronian beds, the Echinoderms, Mollusca and Arthropoda (Trilobites) in the Cambrian, and the Vertebrate in the Silurian."

As to the evolution of the Vertebrates, the author follows Haeckel "Many of them present rudimentary organs—digits, feet, fins, teeth and wings—and there is scarcely an organ which is not somewhere rudimentary." The reptiles are supposed by Haeckel to be derived from the Batrachia, but the Batrachia may have been derived from a certain kind of fish. Prof. Cope says : "I have traced the Mammalia to the reptiles of the Permian epoch. The crocodiles display superiority over other reptiles. but the brain of the living mammalia over all other vertebrates." The air-breathing types display a wide diversity from the gill-bearing types, though fishes and birds are both egg-producers.

As to the Batrachians, we find them first in the Coal Measures. They reach a large development in the Permian epoch. The reptilian line is traced back to the Triassic period. The paleontology of birds is not so

well known. The first bird known is the *Archeopteryx* of the Jurassic period. "The paleontology of the Mammalia is better known, for the placental animals appear in the Jurassic." The phylogeny of man is remarkable, for it is in the structure of the brain and in the reproductive system that he excels. But the period in which he begins his history is uncertain. Prof. Virchow maintains that scientific anthropology begins with living races, but Prof. Cope carries it back to the time when there was an approximation to the Simian type, and considers the Neanderthal man as the missing link. He classifies all of the recently discovered skeletons which have been ascribed to the palæolithic times together under one head; includes the man of Spy, the man of Java, and of Naulette, and Shipka. He says they belong to the species "*Homo Neanderthalensis*" and not to "*Homo sapiens*." In the first we have a greater number of Simian characteristics than in any of the known races. No trace of the species has been found in America. It is interesting to observe that the flints found with the human remains in France, known as Mousterien, are of the same form as the Obsidian implements collected at Fossil Lake, in Oregon, with the bones of extinct animals—such as llamas, horses and elephants. Prof. Cope believes that there was a wide gap separating the Paleolithic man from the Neolithic. That the first was associated with extinct animals, and the last with living species only.

The Unity of the Book of Genesis. By William Henry Green, D. D. LL.D., Professor of Oriental and Old Testament Literature in Princeton Theological Seminary. New York: Charles Scribner's Sons. 1895.

The great difficulty with all the books on the Higher Criticism of the Pentateuch is that, on which ever side they are arrayed, none of them give the view held by the scientists who are studying into the subject of origins. There is a reason for this. It is as follows: The higher critics, so-called, do not believe that the Pentateuch was written by Moses, or in the times which, according to the traditionary view, is ascribed to it, but at a much later date, perhaps as late as at the time of the exile. The result is that they have no occasion to make many statements as to the primitive beliefs. On the other hand, the defenders of the old view, who are well represented in Dr. Green, the author of this book, believe so thoroughly in the inspiration of the scriptures and their inerrancy, that every statement is accepted as literally true, and no effort is made to explain the language except in a religious sense. There is, however, a great need of a book which shall embrace the views of anthropology as held by the scientific men and the careful and correct interpretation of the scripture record, and if possible reconcile the two. The time perhaps has not been reached for such a book, yet we have no doubt that as science advances the two records will prove to be in accord.

We find in the scriptures that the first man was arboreal in one sense of the word, a dweller in Eden—a pair which drew sustenance from the trees, and well represented the golden age spoken of in mythology. What is more, there is a wonderful correspondence between the traditionary and mythologic account of the tree and the serpent and the scripture view. The opinion of ethnologists as to the unity of the race and the original starting point is in accordance with the Bible; though there is a great difference among the linguists, for some maintain that many languages have

no relation either to the Aryan, Turanian, or Semitics. The view of the outcast condition of Cain and the contrast which existed between the Sethites and the Cainites is not so strange to one who understands the laws which prevail in primitive society, and who realize the contrasts which arise between those clans and tribes who go out from a common center to establish cities for themselves. The altar and the offering which was erected so early by the sons of Adam is certainly in accord with the custom of primitive people; for religion is the chief thing with them. The naming of animals, or rather the naming of clans from animals, was a common custom. The divine names of the tutelar divinities were naturally different, and yet there seemed to have been a common conception of universal divinity. As to the unity of God and his personality, some held that it was a later conception.

This was the conception in the far East and in the West. Lenormant says:

The universal divine was manifested in the natural world—a divine nature working in all the universe; the author of all physical life, who destroyed his work each year to renew it afterwards at the changes of the seasons.*

Each tribe and town contemplated the Divine Being as their own tutelar god, who ruled all the phenomena of nature, and the course of their history, and even their destiny. These personages were not generated separately, but in couples, which were male and female, and constituted a complete unity.

We will say this in reference to the scriptures, there is far more unity in them than in any series of books or sacred writings that have ever appeared, and in this respect Dr. Green is perfectly correct. Whatever we may say about the fragments which were put together this is certainly plain. The old theory in reference to the poems of Homer as being made up of fragments, and the later theory of the poems of Ossian may be discussed again and again, but there will not be found so much unity in these books as in the scriptures. This may be owing to the under current of religious thought which is always powerful with a people who have inherited their religion, or it may be owing to a divine spirit of inspiration. Still, the fact remains the same. The history of this book is as follows: Dr. Green in 1888 began an amicable discussion with Dr. W. R. Harper in the columns of the *Hebraica*. In reference to it Dr. Greene says: "As the discussion proceeded I found myself unable to discover sufficient reason any where for the assumption that the Pentateuch was a compilation from pre-existing documents, and by the time that my task was completed I had settled down in the assured belief that the so-called documents were a chimera, and that the much-vaunted discovery of Astruc was no discovery at all, but an *ignis fatuus* which has misled critics ever since into a long and weary and fruitless search through fog and mire, that might better be abandoned for a forward march on *terra firma*."





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NOTES ON OCEANIA.

BY JOHN FRASER, LL.D., SYDNEY.

INTRODUCTORY.—When a new proprietor enters into possession of a wide domain, his first care is to view its extent and examine its boundaries. That is what I will now do for Oceania.

Let us take a map of Eastern Asia and on it draw a line beginning at the east end of the island of Timor and continuing upwards along the west coast of Gilolo and on till it terminates in the ocean near the east coast of the Philippines. All the islands to the west of that line are in general Malayan; they are the Malay Archipelago, but I usually say INDONESIA instead and Indonesian, for that name is more easy to handle. To the east of that line lies Melanesia; and if the line be continued from its northern end in a south-easterly direction round the east of Fiji, then west and south to include the New Hebrides and New Caledonia, thence to Cape York and Thursday Island in Torres Straits and onwards to the point of commencement at the east of Timor—all within that enclosure is MELANESIA. Many clusters of small islands—extending as far east, perhaps, as the 180th degree of longitude—lie to the east and north-east of that boundary line, as it runs from the Philippines to Fiji,—these are MICRONESIA.

Everything in the Pacific beyond Melanesia and Micronesia, including New Zealand and the Hawaiian Islands, is the home of the brown Polynesians. I call it simply POLYNESIA, restricting the application of the name to that region of brown men. Here every group of islands is easily distinguished and the race is uniform. But it is not so with the Melanesians. These I divide into *Papuan*, *Papua*, *Fijian*, *Ebudan*, and New Caledonian. The Papuans occupy New Guinea, the islands in Torres Straits and Mysol, Salwatty, Waigion, the Aru and the Ké islands on the west of New Guinea. They are called Papuans from their frizzly and wool-like hair (*papua*). The name Ebúdans for the New Hebrideans, I have formed from *Ebudes insulæ*, the old Hebidres. To the people in the islands

north of the New Hebrides and eastwards from New Guinea to Fiji I give the modified name *Papuak*, because, although allied to the Papuans, they are not quite like them. Of course, the Fijians do not require a new name, but if a concise name were wanted for the New Caledonians I would call them Albannic, from a Gaelic name for Old Caledonia.

And AUSTRALIA is Australia—an island-continent, with its own race of blacks.

These things I have stated at the outset as a sort of definition of terms, in order that your readers may know precisely how much each term signifies when I use it.

NORFOLK ISLAND.—It is a hundred years since the crew of H. M. S. "Bounty" mutinied against their commanding officer, Captain Bligh, and set him adrift, with a few companions, in a small boat, in the South Seas. The mutineers, taking with them some Tahitian women, settled on Pitcairn Island in the far east of the Pacific. There they established a form of government, which was both patriarchal and religious in its principles. When accidentally discovered there many years afterwards, the Pitcairn islanders had increased to a great multitude, and were found to be a pious and well-ordered community, living under their own laws and institutions. In recent years, the British government had them removed, with their own consent, because that island was then too small for them all. They were transferred to Norfolk Island in the Tasman Sea, about three days' sail to the north-east of Sydney, and there the descendants of the original mutineers still follow an amiable and patriarchal mode of life. Norfolk island is also the headquarters of the Melanesian Mission of the Church of England, and there many young natives from various parts of Melanesia are trained for mission work in their own and other islands. The Public School has at this moment 120 scholars, whose progress is satisfactory. The Imperial Government last year resolved to hand over Norfolk Island to the control of the colony of New South Wales, of which Sydney is the capital. The latest advices from the island tell us that the Pitcairners look on this arrangement with suspicion, for they fear that it might some day bring changes in their old Constitution and social system. Evidently they value the simple forms of living which their ancestors established in their first home.

ETHNOLOGY.—I have not yet seen Prof. Ratzels' *History of Mankind*, No. 6, but in the midst of the many conflicting theories as to the origin of the Polynesians, I presume that it gives us neither a new nor an indisputable solution of that question. The Malayo-Polynesian theory has hitherto held the field, chiefly through the start given to it by K. W. V. Humboldt, who, sixty years ago, showed that many words in the Malay and Polynesian languages are the same; hence it has been argued that the Polynesians got them from the Malays and are themselves of Malay origin. Several able names have combated that theory, specially the elder Gabelentz and A. R.

Wallace, both of whom see an underlying connection between the black and the brown races of the Pacific. My own view of the matter — and I have thought over it for many years and written about it — is briefly this :

The black race was the first to move from the primal home of the human race, somewhere near the head of the Persian Gulf. One of the social convulsions, so common in those early times, split them into two portions — the Eastern and the Western Ethiopians of Herodotus — driving the one part into Africa and the other into India. These I call the pure Hamites. But a subsequent and more diluted black race, the Kushites, came into India, and these two sections of the blacks were the first inhabitants of that land and of Further India and of Indonesia and Australia and Melanesia and of the islands of the Pacific, where they seem to have spread themselves very far to the east, for I ascribe the curious ruins on Easter Island to these aboriginal blacks. All the localities I have named are either now held by the black race for traces of its presence there at a former time can still be found. Among the brown Polynesians even some of the islands have a distinctly blacker and coarser population than others. But somewhere near the beginning of our era there came into Indonesia a fair Caucasian race, of which the Khmers of Cambodja are probably a survival ; these conquered the littoral blacks and, amalgamating with them, became the ancestors of the present brown Polynesians. Thus the language formed by this union is largely Caucasian, but contains also a Hamitic element. Many of these original Polynesians may have wandered forth in the early centuries into the islands of the central and eastern Pacific ; but at a much later time, perhaps about the twelfth century, the Malays, a Mongolian race, invaded Indonesia in force, and drove the inhabitants farther afield. These fugitives, finding their route eastwards barred by the fierce Papuans, passed round by the north of New Guinea, and thus got to the nearest islands of the Pacific, whence they have spread themselves into all Polynesia.

This view of the question is in harmony with the belief of Wallace when he says : " I believe that the brown and the black, the Papuan and the Fijian, the inhabitants of the Sandwich Islands and those of New Zealand are all varying forms of one great Oceanic or Polynesian race." But my theory also accounts for the acknowledged resemblance between the Melanesian and the Polynesian languages and the Malayan. The original Melanesian element in the Malay Archipelago is the base of the whole composite linguistic system ; mingled with that is a large Caucasian element, the resulting compound is Polynesian ; the Malays, when they came into the Archipelago, *adopted* much of the Polynesian speech which they found there. In this way, I think, it happens that many Polynesian words are found in purely Melanesian dialects, and the Malayan language is Polynesian, but the Polynesians are in no respect Malayan.

SOME NORTH-WEST BURIAL CUSTOMS.

BY JAMES WICKERSHAM.

The people of the north-west coast, from Southern Oregon to Alaska, were a race of fishermen. The clear, cold streams pouring down from the snows and glaciers of the flanking ridges of the great Rocky Mountain system, teemed with trout, salmon and sturgeon, while off the Straits of De Fuca, and thence northward, the ocean shoals were covered with choice fat halibut. These ocean and river-fringe people were whale hunters, seal and sea-lion catchers, fishermen and typical savage seamen. Makah whale hunters yet go far out on the ocean; canoes from Alaska yet visit Puget Sound; in early territorial days these forays of the Alaskan Northmen were so feared that laws to suppress them were passed and enforced.

When he had died, these seafaring tribes placed the once brave, but now dead whale-killer, or salmon catcher, upright in his favorite canoe, fixed his best paddle in his hand, placed his fishing gear and other personal ornaments around him, covered him with his choicest mats, and elevated this mortuary vessel in tree forks near the beach. What more fitting sarcophagus for a prince of Fishland than his great canoe? Its high carved and painted prow is as graceful as a swan's neck; its lines are more perfect than those of a Venetian gondola; it is as worthy to form his last resting place as was the great war vessel of that of the hardy Norseman. Many a time have I dragged a flattened skull from a decayed and fallen canoe, when it lay surrounded and covered by the mouldered and rain-washed remnants of the burial trappings.

Sometimes the burial canoes are placed on cross bars split from cedar logs, and are elevated but a few feet above the ground. Instead of the covering of blankets or mats, very frequently the corpse was laid in the canoe, and a smaller canoe, without a prow, would be turned bottom side up within the larger vessel as a covering. On occasions, where the deceased was of less local consequence, the canoe would receive the corpse and his belongings, then be covered and pushed into the thick brush near the beach.

At Neah Bay a scrubby and many-limbed fir tree disclosed another ancient method of mortuary disposal. A well adzed box of native manufacture, small, strong, but of lasting cedar, lashed securely to the main stem of the tree, about ten feet above the ground, contained the body and infantile garments of a child. Wind-frayed and rotten ropes of grass and cedar bark were attached to this and other neighboring trees, showing quite plainly that other burial boxes had long since rotted and fallen to the ground. Burials in trees were also made by wrapping the corpse in a blanket or mats, and securely tying it to the limbs above the reach of the animals.

Not all of these north-west coast burials, however, were ærial, for they also buried in graves and grave houses. Many were buried in shallow pits, and the grave covered by an upturned canoe. It seems that when canoes were scarce, or deaths frequent, they cut the canoe into halves, for many graves were only covered by a half length of canoe. Instead of the canoe, many graves had for a protection a box of split and adzed cedar boards, about two feet high, two feet and a half wide, and six feet long, strongly pegged together.

Poverty affects the Indian as it does the white man, for some graves were covered neither by a canoe nor box, but by a heap of round fir logs. One grave was under the overhanging roots of a great fir tree and covered by logs. In ancient times the body of a slave was thrown into the sea, but in recent days it is given the meanest burial. Most of the graves, however, in the cemeteries seen were carefully protected by some form of a covering—canoe, box or house. The commonest mortuary covering is the house. It is sometimes of logs, surmounted among the Thlinkits with a great bear or bird totem; or of split cedar, and more recently of lumber from the Puget Sound mills. They sometimes tear down the house in which a person dies and build the grave house from the lumber. At the Aht village in Port San Juan, on the west coast of Vancouver's Island, we saw one mortuary house of such material, with two large American-made windows set together for a roof. In another the doors were used to form the roof, while various parts of the house are seen built into the burial covering. Another was about four feet square and about six feet high: it looked as if the corpse had been buried in a standing position, but as the interior had almost rotted away we could not be sure. The walls of this house were built of great cedar boards, formerly covered with paintings of the "thunder bird" and other mythological designs. At the mouth of the Queets River, north of Gray's Harbor, we saw the mortuary house of a Quiniault girl. She and her lover were employés of the government school, but stricken with the consumption she died, and he brought her back to the Queets, and buried her in the old-fashioned way with her people. The house stands on the south side of the beautiful river, in a bunch of noble cedar and fir trees; it is about six feet square, with a sloping roof, and built of planed boards and shingles. A small door, securely locked, adorns the front; under the eaves, next to the river, is a large framed photograph of the deceased; on the trees around the house hang all her dresses and clothes; in front of the little house all of her dishes, gathered for the marriage, lie broken; everything belonging to her—personal ornaments, books, dishes and clothes, pictures and cheap jewelry, lie scattered around broken and useless. Her lover had been taught better than this at the Indian schools, but when death had robbed him of all he loved, his old training overcame him, and in spite of protests and threats, he caused her to be laid away in the quiet of the Queets' Indian burial ground after the fashion of their fathers.

This is by no means an unique burial, for at Neah Bay I saw on the grave of a wife her sewing machine, wash-tub, baskets, cradle, dishes, stove, and all the household ornaments and her clothes, so broken and torn as to be useless. On more ancient graves were the old Indian baskets, fishing tackle, masks and mats, moss-grown and decayed. On a child's grave were rattles, baby toys and even its little shoes. This ancient practice of destroying with the dead all his personal property has rendered this region very poor in relics; none remain from generation to generation, except what the living make by copying from the old, and these in turn are destroyed at the death of the owner. Nearly of the splendid dog-wool blankets, carved whalebone war clubs, old baskets, and the best work of these people has gone to the grave with the owner.

At the Aht village I saw a new grave; a few feet away was the remains of the funeral fire, wherein the clothing, dishes and property of the deceased had been burned. Some of these tribes also burned the dead, while others killed slaves at the death of prominent and wealthy chiefs; on the Columbia River we know that anciently, like the Aztecs, they burned small children to lie in the dead houses as an offering.

In front of the grave of "Glâ-shâte," a Neah Bay woman, stands a large mortuary painting. It is painted on a screen of boards about six feet high and fourteen feet long. To compose this screen four large cedar boards, well adzed to a uniform thickness of one and a half inches, are tied by sinews to some upright posts set firmly in the ground. The mythological painting covers the whole front of this great board, and represents features in the girl's family. The paints used are red, black and white, and the characters are the conventionalized Indian ideas of the "thunder bird" and the raven, while others have some relation to the woman's ancestors. This is a "woman's board," and is distinct from that used at a man's grave. It was painted by a Barclay Sound, Vancouver's Island, native. Surmounting the board at each end is a mask, one represents her grandfather and the other her grandmother. This painting was presented to the woman many years ago, and was kept in the family waiting for the day of her death, when it finally served its purpose as a monument. Behind this screen, strewn over and around the grave, was her broken stove, rocking chair, wash boiler, dish-pan, dishes, a Domestic sewing machine, etc. The only grave boards, except this, at Neah Bay, are several split cedar boards, about five or six feet high, with this and other articles of household use nailed on them. Formerly these Indians, like those farther north, erected carved totem posts, but this practice was never widespread as far south as Puget Sound.

PRE-HISTORIC REMAINS AT ST. PAUL, MINNESOTA.

By T. H. LEWIS.

Nearly all the cities and towns in the Mississippi Valley are located upon sites which were formerly occupied by the Mound-builders, and in this regard St. Paul was evidently a central, as well as a much-favored locality in pre-historic times, as is evidenced by the numerous groups of mounds and village sites that formerly existed within its present limits.

The principal village site is located on a low plateau at a point where the trend or the bluff begins to recede from the river, at the upper end of "Pigs Eye Flats." Here, from time to time, numerous relics have been found, which consist of grooved axes, celts, chisels, hand-hammers, grooved hammers, arrow and spear heads, awls, knives, stone disks, pipes and other débris, including fragments of pottery composed of shell and clay, broken stone and clay, and sand and clay. The site covers some eight or ten acres, and near the lower end there is one small round mound.

Village sites also existed at seven other points on the east side of the river, two being located on Phalen's Creek and the others along the river. On the west side there were two well defined sites, and two other localities where there were more or less indications of a former occupancy, which were brought to light in grading streets and excavating for foundations.

In 1878 there were four groups of mounds located on the east side of the river, with a total of 58 mounds of all classes, and on the west side there were two groups, with a total of 31 mounds, the largest of which was seven feet in height.

DAYTON'S BLUFF MOUNDS.

Near the upper end of the bluff there was formerly a group of mounds located between what is now Hoffman Avenue and the edge of the bluff, and extending from Euclid to a short distance below McClean street, a distance of a little over five blocks. This group formerly consisted of 32 mounds, but at the time of a personal survey by the writer, on November 1st, 1881, nine of them, principally located near the center of the group on Block 65, had been entirely demolished. Of the remainder, there were two round mounds connected by a low embankment, two elliptical, and nineteen round mounds, the largest of which was 47 feet in diameter and five and one-half feet in height.

The group located at the lower end of the bluff at the junction of Mound and Earl streets, overlooking the village site and "Pig's Eye Flats," and now within "Indian Mound Park," is finely situated, and commands a magnificent view of the river, a large part of the city and the surrounding country for miles. This group formerly consisted of one round mound

with an approach, one elliptical mound, and sixteen round mounds, the largest of which was eighteen feet in height, and the largest round mound in the state. In 1856, the late Dr. Edward D. Neill made an excavation in it, and at the depth of six feet found the fragmentary remains of a human skeleton and a few pieces of broken pottery.

On May 7th and 8th, 1862, William Wallace and Alfred J. Hill located the mounds in the two groups on the bluff, from base-lines run for the purpose, but did not take their diameters and heights.

Very little attention was paid to antiquities in the early days of St. Paul, and the little interest that was shown was awakened by Alfred J. Hill and Col. D. A. Robertson, both of whom have passed to their reward. Mr. Hill, as the secretary of the Committee on Archæology of the Minnesota Historical Society and later as its chairman, kept a personal copy of all the records of the committee, the originals of which were destroyed in the Capitol fire, in 1881. An abstract is here given from the said records of the more interesting portions relating to the present city limits:

"At the regular meeting of the Executive Council held on May 14th, 1866, on motion, the chairman appointed a special committee, consisting of Col. D. A. Robertson (chairman), Capt. Russell Blakeley and William H. Kelly, to secure the completion of the survey of the two groups of mounds located on Dayton's Bluff, and also to cause the excavation of one or more of the mounds, the whole expense thereof not to exceed thirty dollars."

The following is an abstract from the report of William H. Kelly, which is dated June 11th, 1866: "On the 19th of May, the day appointed by the Council for the excavation to take place, the men engaged did not present themselves, and not wishing to postpone the work, the excavation was necessarily confined to one of the smaller mounds, the work being performed by two members of the society—Messrs. Hill and Kelly. The mound (number 7) selected was located near the center of the lower group, elliptical in form, being 42 feet in length, 28 feet in width, and four and one-half feet in height. An excavation was made in the western half of the mound, and at a depth of three and one-half feet a layer of red earth (vermillion), about one inch in thickness, was met with, of irregular shape, about two feet in length and one and one-half feet in width. At a depth of about four feet several pieces of lime rock were uncovered, and beneath these were several fragments of human bones, a broken earthen pipe, composed of broken stone and clay, and near them a large number of sea-shell beads closely packed together, which from their position it was surmised that they had formed a bracelet. On the same level, all being located within a space of a few feet but without any regular order, were several other human bones including vertebrae, a part of a lower jaw and a part of the lower portion of a skull which was lying upon its left side."

"On June 8th, under the supervision of Mr. Hill, the eastern part of the mound was excavated. Near the center of the mound was a pit or fire-place one and one-half feet in diameter, over one foot in depth and filled with charcoal and ashes, among which were two pieces of unburned bones. The bottom of this pit was nearly six feet from the top surface of the mound. At various places in the mound were pieces of decayed mussel shells and charcoal, and about two feet above the pit two pieces of broken pottery, composed of shell and clay were found."

"Last year this mound was graded away by orders of the Park Board, in order that a better view of the river might be had from the street. On September 25th, while the graders were at work on the southern side of the mound they unearthed the remains of four skeletons. When the dirt was removed so that the position of the bones could be seen, it appeared that the first or upper skeleton had been laid in a reclining position, the skull, vertebræ and ribs were on a slightly higher level than the bones of the lower extremities. Directly beneath this skeleton lay another, crosswise, and the third and fourth ones were still lower down, though not entirely separated by earth from those above them. Later in the day two thin pieces of hammered copper were found at a point some two feet distant from the bones towards the center of the mound. The larger piece of copper was crescent-shaped, about seven inches in length and two inches in width and had evidently been used as an ornament. The other piece was similar in shape, and so thin that it was practically in pieces when found. It was about four and one-half inches in length, two inches in width and probably used for a like purpose. Four pieces of an earthen pipe composed of broken stone and clay were also found, together with a number of mussel shells and some small pieces of pottery."

"On the same day, June 8th, an excavation twenty-five feet in length and five feet in width was made in the largest mound (number 8), which was formerly eighteen feet in height, and which was partially excavated by Dr. Neill. At various depths, from four to ten feet below the bottom of the half-filled excavation, pieces of charcoal and fragments of mussel shells were met with; and at ten and one-half feet a human lower jaw which evidently had belonged to a youth of about eight years of age, was exhumed. The excavation was carried down to a depth of about twelve feet, or about fifteen feet below the former top surface of the mound, but nothing else of interest was found."

"On June 11th, Mr. Hill was added to the committee, and the following year, on April 8th, 1867, the President of the Society appointed Col. D. A. Robertson, Alfred J. Hill and Dr. C. De Montreville as members of the Standing Committee on Archæology, and on June 10th the special committee was discharged and the objects of the same referred to the standing committee for further action."

"In a report to the Council, dated October 14th, 1867, Dr. De Montreville states that on the 2nd of July an indistinct

mound (number 5) was opened. Near the center, at a depth of three feet 10 inches from the surface, were 'the skeletons of a male of about five feet 11 inches in height, also what is thought to be the skeleton of a female of about five feet in height — the former in a good state of preservation. The two skeletons lay in very close juxtaposition, in fact the bones may be said to be commingled, and were apparently laid upon their sides facing each other. The most noticeable feature was, the almost entire absence of the bones of the skulls, the most careful research failed to discover more than what might be thought to be a minute portion of the cranium bones.' "

"Also on the same day mound number 2, situated on the extreme point of the bluff, was opened by sinking a shaft ten feet in length and five feet in width. At a depth of a little over four feet a fragment of a left femur was found, and at a depth of six feet four fragments of a skull, and at ten feet a fragment of a right femur was exhumed, but beyond this nothing else of interest was noted."

The above would seem to have been the last work done in St. Paul by the committee, and their last work in the field was at Starvation Point, Lake Minnetonka, on September 25th, 1867, at which time two mounds were excavated. After the above date it appears the committee existed as such, until 1874, though the annual report of the society makes no reference to their work after 1871. One of the most remarkable things connected with this committee was their failing to find the other mounds and the village sites within, and adjacent to St. Paul, but it is presumable that the mounds on Dayton's Bluff gave them their first impressions of such remains, and that the want of the necessary time to devote to such matters prevented them from discovering the other localities.

CAVE PICTOGRAPHS.

At the foot of Dayton's Bluff, which skirts the river in the lower part of the city, and just above the foot of Short street is located the famous Carver's Cave, now partially demolished. On the roof and sloping sides were formerly numerous carvings representing snakes, birds, animals and men. About one block higher up the river — just above the foot of Cherry street — is another smaller cave, in which are carvings representing men, birds and animals, cut in the side-walls and roof, all of which are outline figures. About two miles up the river near the end of the C., St. P., M. & O. railroad bridge is another cave in which, on the side-walls near the entrance, were formerly to be seen snakes, birds and animals, cut in a similar way to those in the other caves, but much more rude in general outline and finish. On the west side of the river, on South Wabasha street, there was formerly a cave in the foot of the bluff, in the front entrance of which were similar devices cut in the side-walls, but in grading the street the front part of the cave was cut away and the rear is now used as a cellar.

ST. PAUL, MINN., June 5, 1896.

THE PSYCHOLOGIC DEVELOPMENT OF MEDICINE.

BY J. H. McCORMICK, M. D., OF WASHINGTON, D. C.

[Read before the John S. Hopkins Hospital Historical Club, Monday, April 8th, 1895.]

Scientific minds have been endeavoring, for some years past, to solve the problem of the aboriginal origin of the North American Indian. Various theories, more or less plausible, have been advanced, but chief among them is the one which claims him to have lived in the north of Asia, and migrated thence, by one of several possible routes, into America.

The similarity of customs, religions, institutions, language, legends and racial characteristics of these two peoples, the supporters of this theory maintain, proves them to have sprung from the same stock, and that the differences which exist, are due solely to the modifying influence of environment. While this may be to a certain extent true, it is not conclusive; on the contrary, it may be shown that no matter what the environment, any people, by a process of psychologic development, will arrive at a result, which is fundamentally the same. Amplification of detail depends almost wholly upon surrounding conditions. In other words, it is assumed that by reason of the existence of such analogies, identity of origin is proven, while on the other hand it is possible for these analogies to arise independently, by mental evolution. This latter postulate, then, stated in terms of an ethnologic formula would be: If two peoples have the same or analogous customs, laws, or religions, it does not necessarily prove them to have originated from the same stock. Conversely, if two peoples have the same or analogous customs, laws or religions, these customs may have arisen independently by mental evolution.

It is our province to attempt to demonstrate the converse of the foregoing proposition, by showing it to be possible, at least, in the psychological development of medicine.

The supporters of the first named hypothesis maintain that there are but two ways for the dissemination of analogies in culture, contact and migration. May it not be possible that the adherents of this theory, which for convenience, may be called the *contact and migration theory*, have fallen into error by viewing past civilization through the telescope of modern culture? They have attributed to uncivilized people the same modes of promulgation of ideas that we have to-day; that is, by frequent intercourse, by prolonged visits and by migration. Let us consider them:

First.—Frequent intercourse; From the very nature of things, it would be necessary that contact be frequent, hence the qualifying adjective. New thoughts and usages cannot be received and assimilated by a casual visit, but must be often heard and explained before they become engrafted upon a single indi-

vidual. The probability of their being fostered by such a number of persons as to make them of tribal or national practice, and leave their impress upon their successors is much less. While there was, undoubtedly, intercourse between different tribes of the same country and of different countries their modes of conveyance, either by land or sea, were tedious and perilous, consuming long periods of time and were principally for the purposes of barter, the time of sojourn being of short duration; consequently, whatever innovations were brought were crude and meagre, and usually not of sufficient force to appeal to their conservative natures. The changes effected by this cause were extremely few, as it was operative at a time when the culture status of all peoples was fairly well established.

Second.—Prolonged visits. It has just been noted that primitive peoples were extremely conservative, all proposed changes in the established order of things being looked upon with suspicion, and regarded as some inimical agency, either of man or demon, to be sedulously avoided. The herald of new ideas was condemned and executed or driven out, and the wiser he seemed, the more certain were they of the correctness of their apprehension, and the more essential was it to rid themselves of the unwelcome visitor even though he be one of their own kinsmen. Furthermore, when the visitor remained long enough to become well versed in the new customs, he either did not wish to return or was not allowed to return, and, if the latter, the associations of his captivity, after he had escaped, would be distasteful rather than otherwise, and would lead him to banish them instead of cherishing them.

If, as shown before, he came back from his prolonged visit, and found he could implant his new ideas upon his fellows, it would argue a far advanced state of society.

Third.—Migration. When a large body of people remove their habitation from one locality to another they carry nearly, if not quite, all of their customs with them, and revive them in their new abode, with such modifications as their surroundings make necessary. From one or another cause, many of their details may be lost or modified, but the underlying thought survives, which constitutes a claim for identity of origin.

In answer, I hope to show, that while this may be true in a few remote instances, more often these striking similarities may and do arise independently by a process of mental evolution—a psychological development.

The truth of evolution is nowhere shown more strikingly than in the functional activity of animal life, developing from the lower to the higher plane, beginning in the plants, and gradually, by successive stages, ascending to animals, and from animals to man.

Certain plants, as the Sensitive plant (*Mimosa pudica*), or Venus's Flytrap (*Dionæa muscipula*), and many others of this

class, act, as if by some instinctive force, without brain to guide and control such actions.

In the lower animals these actions are controlled by a brain, rising from a rudimentary nervous ganglion to one approaching that of man. In the highest type of animals the performance of many acts is accomplished by what we call instinct.

These functions are performed in both plants and the lower animals with the unerring regularity of physical laws, upon which they depend. But the animal goes one step farther. Associated with instinct there is memory, and perhaps to some slight degree, the power of differentiation, while in man, the highest stage in this development of nature, there is memory and differentiation to a marked degree. Man is especially distinguished from animals by his power of classification, which enables him to arrange and formulate the various impressions, either consciously or unconsciously, which he receives. This is the beginning of culture.

Like things must give like impressions, and like impressions must be classified alike. This is obvious if reference be had to the minute anatomy and the physiology of the central nervous system.

When a nerve has reached that point in its deep origin where it can no longer be traced as an entity, we find that "processes of a multipolar cell divide and subdivide as they pass away from the cell, until at last they form branches of extreme tenuity and an excessively minute network. These processes apparently consist of cell-protoplasm, and are named *protoplasm* processes."

When any vibration passes along the nerve these ultimate "protoplasm processes" are set in motion; this is registration. The storing up for future reference is memory; the differentiation and classification either voluntary or involuntary, is thought. For example, if the waves of sound, produced by striking a low key upon a piano, are a certain number per second, say E of the double-bass, which makes $41\frac{1}{2}$ vibrations, and those of middle C are 256, these vibrations are transmitted to the "protoplasm processes" which are set in motion and the two notes are registered; now, whenever any sound is made having the same number of vibrations, by the power of differentiation they are analyzed and classified as a low note and a high note, and by memory referred to the initial sounds of E and C respectively, and whenever or wherever heard they are always the same, no matter how produced, because the same set of nerve cells are set in vibration in the same way.

By differentiation and classification these impressions may be changed so as to register a new idea, following the same law as two bodies moving in opposite directions, which, coming in contact will move, as a result, in a direction different from either; in other words, if two impressions are brought in contact, the resulting idea will be a part of both, and this is the mechanism of thought.

No matter where an individual may be, the same phenomenon will produce the same effect, and by association of thought or the jointure of two or more, a new one is formed.

There are certain things in nature which man sees and imitates, and from time to time improves upon, as necessity or expediency arises, and this constitutes the genesis and growth of culture, for everywhere and at all times he has by the foregoing processes brought culture from a lower to a higher state.

By physical and psychical laws, then man has attained the same thought and these thoughts have given rise to similar customs, wherever the conditions were the same, and were not therefore received by "contact or migration."

In the development or evolution of medicine four stages are traversed—imputation, personification, reification and scientific. Explanation.—By imputation is meant, attributing to things, powers and properties they do not possess; personification is when these attributes are deified or personified; reification is the designation of that stage in which these attributes are reified or made real, while in the last an attempt is made to give the true or scientific explanation. In proportion as the degree of culture advances, we find medicine ascending from the lower to the higher of these stages, so that culture development is but a history of the healing art from empiricism based upon imputation, to scientific or rational medicine.

Among all primitive people everything is symbolic; their words and thoughts are expressed in symbols and the unknown is expressed in terms of the known by this means; symbolism pervades everything, everywhere. Since all practice is based originally upon some pre-conceived theory and is the practical application of such theory, the history of medicine is the evolution of the mental conception of the cause of disease and of the various agencies which govern or modify it.

How do primitive people formulate their theories? By observing nature in all of her protean forms and infinite variety. They are close students of nature and of natural phenomena, but are unable to see beneath the surface, and beholding that which is far beyond them, attribute it to some supernatural, some divine being, who shifts the scenes and causes the changes of day and night to follow one after another.

Thus, unknown forces and phenomena are ascribed to more powerful beings than themselves, having powers and attributes similar to their own, but in a magnified degree. The mysterious movements of nature are operated and controlled by these supernatural personages, and hence are attributed to causes which do not exist. This is imputation.

To illustrate, the North American Indian believes the breath to be the spirit or soul, and this is how he arrives at such a conclusion: on a cool, frosty day the warm breath as it leaves the mouth, is condensed by the cold air, forming a slightly visible cloud, and he observes that all living animals, both man and beast, emit this cloud and that when dead this phenome-

non does not occur; therefore, he reasons this must be the spirit of life, and its absence denotes death. Again, he hears the thunder, and attempts to find, in the living objects around, something like it; he perceives that the growl of the bear somewhat resembles the noise of the thunder; therefore, a great bear must have made the thunder, and what he hears is this animal growling in the heavens. When the breath is blown upon the hand a slight force or pressure is felt, and as a result, when the winds begin to blow it is but the bear-god sending forth his breath; if gentle, it is a life-giving, beneficent breath; if strong or forceful, it is an angry, death dealing, destructive breath, showing that the sky-bear is filled with rage. The clouds are but the prototype of the breath of man, only being so much greater they must have come from the bear-god, who can render himself invisible.

This is imputation, in that he attributes to the bear the power of thundering, and causing winds; conversely when he hears the thunder he reasons that the bear causes it.

In time, he notes that when it thunders, a storm is about to break, cold wind and rain follow, and the hunter becomes wet and cold, and from consequent fatigue and exposure, takes cold, chills and fever, rheumatism and other diseases follow. This is the bear disease, for did not the bear cause it. For some reason it may be he has angered the wind-god or the rain-god, and thus their displeasure is visited upon him. To propitiate by prayers, gifts, sacrifices, and the performances of ritualistic ceremonies is his chief hope of relief.

We will now consider the evolution of medicine, as it has actually existed, from the beginning to the present time, taking the four stages in order of their occurrence. It must be remembered, however, that while one particular stage predominated, at any given time, even at first some degree of all were present, just the same as now.

Imputation.—Let us first endeavor to ascertain what was early man's conception of disease, for upon such conception depended his method of treatment, and in passing, attention is called to the fact that the same ideas, fundamentally, are found in every quarter of the globe, thus giving positive evidence in support of the statements and assertions made in the proposition which it is the promise of this paper to demonstrate.

"Man," says Tylor, "as yet in a low intellectual condition, having come to associate in thought those things which he found by experience to be connected in fact, proceeded erroneously to invert this action, and to conclude that association in thought must involve similar connection in reality."

There are certain physiological functions, such as digestion and elimination of excretions, upon which the body depends for its existence, and when these are disturbed they give rise to pain or discomfort, and not knowing that such a departure from his normal condition is due to perversion of function, he connects it with some mysterious power—a malevolent spirit.

After he has witnessed death, and has recovered from the shock occasioned thereby, he seeks to find a reason for this sudden loss of energy and animation, and the failure to respond to the demands made upon the one who was recently full of life and vigor.

Thus disease and death were caused by anger of offended external spirit—by supernatural powers of an human enemy, or displeasure of the dead.

In India, Africa, China, the Pacific Isles, and among the North American Indians, no natural death was recognized, but poison or witchcraft were the means by which all were removed.

The most powerful cause was the anger of the offended spirit. It has been already shown that the conception of the spirit or god is the natural sequence of the observation of natural phenomena; this idea is universal, and forms one of the strongest proofs in support of the proposition to be demonstrated.

The septennary system of the Hindoo philosophy, so well described by Rhys-David's, has its exact counterpart in the religious scheme of the North American Aborigines. The vast collection of suastica, made by Prof. Thos. Wilson, shows the universality of this idea of the cross, based upon the cardinal points of the compass, and is the result of a psychologic process.

The sun rises in the east and sets in the west. In front was the north, behind the south, above, the sky, beneath the earth, and the centre around which was the abode of man; can you not recognize the analogy to the ancient concept of astronomy in this?

If an east wind blew, the sickness was caused by the god of the east wind; if a man was sun-struck, the god of the south was enraged; if from west or north, a like god was the cause. Propitiations and sacrifices followed, as a logical result, and were based upon their various beliefs relative thereto. The old method of punishment, forced everywhere, of quartering the body, had its origin in the offerings to the gods of the four ends of the world, and from this came the method of crucifixion, in vogue in many parts of the world.

In Lien-chow, province of Kway-oi, if a man strikes his foot against a stone and then falls sick, his family knows it was a demon and offers wine, rice, fruit, incense and worship. Recovery follows.

Supernatural power of human enemies, witchcraft, sorcery, practice of magic, voodooism, and kindred practice, are the imputed means by which an enemy inflicts disease upon his unsavory victim. Witches and wizards have exercised their uncanny and occult powers from time immemorial, a belief surviving among the negroes of our own southern states, to say nothing of the Indian. In New England, even the practice of charging persons with being witches, existed not much more than two centuries ago, and need not here be discussed.

I knew an old negro, suffering from vitiligo, who declared it to have been caused by a witch; and an old woman with a large goitre, which she claimed was due to the poisoning of a spring from which she drank; she thought the poison was placed in the spring by an old witch and was only toxic to her, because any one else could drink with impunity.

Displeasure of the dead was a fruitful source of disease. Ghosts, spooks, wraiths and unlaidd spirits came back, and, invested with power from the spirit world, worked mischief upon those whom they thought had injured them in life. The mythology and folk-lore of every country and every age has teemed with legends of all of these agencies.

Personification.—The transition from the stage just described to personification, is so gradual that no line of demarkation can be drawn. In the former, the various natural phenomena were given as the cause of disease; in this these agencies are deified or demonized.

"Sickness may be caused by invisible spirits, inflicting invisible wounds with invisible spears, or entering men's bodies and driving them raving mad." Tylor, in his *Primitive Culture*, says, "As in normal condition, the man's soul inhabiting his body is held to give it life, to think, speak and act through it, so an adaptation of the self-same principle explains almost all conditions of body or mind by considering the new symptoms as due to the operation of a second soul-like being, a strange spirit." The possessed man, tossed and shaken in fever, as though some live creature were tearing and twisting him within, rationally finds a spiritual cause for his suffering and a name for it which it can declare when it speaks in its own voice and character, through his organs of speech." (Fol. 113-116, Vol. II.)

This is widespread, for we find in China, Australia and North America, stones possessed by demons, and it is this spirit of evil and mischief, not the stone, which inflicts the injury. Among the Dyaks of Borneo and in Cambodia, illness is due to the tormenting demon, while in Australia, small pox is caused by a black deformed demon. Woutan, of Scandinavian mythology, both causes severe illness and pestilence, as well as cures them.

Assyrians and New Zealanders both believe in a demon for each part of the body.

In Ceylon, the demon of disease was the son of a powerful king, whose wife, proving faithless to him, was ordered cut in twain; one part to be thrown to the dogs and one part to be hung in a tree. Before execution, the queen said, "if this charge be false, may the child in my womb be born this instant a demon, and may that demon destroy the whole city and its unjust king." Nevertheless, she was executed, but the severed parts immediately united and the child was born, and it went to feed on the carcasses in the graveyard, and after a time brought disease upon the city.

The Israelites believed disease and death to be due to a destroying angel.

"Disease is still represented as evil influence to be exorcised. In the popular minds disease walks the earth as a devouring fiend, and has a personality about it as of old. Our very phrases 'Stricken with disease,' 'Visitations and seizures,' are survivals of the conceptions of primitive times."

Among the Rosicrucians, disease was provoked by a spirit impressed in crystal. The natives of southwest Australia venerate pieces of crystal called "Teyl," which no sorcerer is allowed to touch, as it would cause the spirit to depart. Capt. Gray notices the accordance of the word "Delcher" in sound and signification with the "Baetylé," mentioned by Burder in his *Oriental Customs*, so celebrated in Pagan antiquities. These stones were rounded and were supposed to be animated by means of an incantation, by a portion of the Deity. Magicians were supposed to be possessed with a power given them from the gods. In Syria, the Witch of Endor (1100 B. C.) claimed to hold conferences with the dead.

In Hellas, Ulysses visited the Spirit World, and men were turned into swine (400 B. C.).

In the consideration of the foregoing subdivision, no treatment of disease in detail has been given, because the method of both was by imputation, and the consideration of special cases, as illustrations and corroborated testimony will be more striking and better followed when the two are combined.

All treatment fell under three heads: dynamic or empiric, thaumaturgic or magical and theurgic or by divine agency, and sometimes one method alone was used, but more frequently all three were combined in a single case. Usually, they believed the efficacy of the drug to be due to some magic rite or formula, which had to be performed or recited before the material was ready for use, and this principle did not exist at all in the agency to be employed, or was at least latent, and the ceremony was necessary to implant or render it active.

This is well shown by the customs of the Cherokees, in gathering herbs for medicinal use. "The shaman goes provided with a number of white and red beads, and approaches the plant from a certain direction, going around it from right to left, one or four times, reciting certain prayers the while. He then pulls up the plant by the roots and drops one of the beads into the hole and covers it up with the loose earth. In one of the formulas for hunting the ginseng, the hunter addresses the mountain as the "great man" and assures it that he comes only to take a small piece of flesh (the ginseng) from its side, so that it seems probable that the bead is intended as a compensation to the earth for the plant thus torn from her bosom. In some cases the doctor must pass by the first three plants met until he comes to the fourth, which he takes and may then return for the others. The bark is always taken from the east side of the tree, and when the root or branch is

used it must also be one which runs out toward the east, the reason given, being that these have imbibed more medical potency from the rays of the sun.

When the roots, herbs and barks which enter into the prescription have been thus gathered, the doctor ties them up into a convenient package, which he takes to a running stream and casts into the water with appropriate prayers. Should the package float, as it generally does, he accepts the fact as an omen that his treatment will be successful. On the other hand, should it sink, he concludes that some part of the preceding ceremony has been improperly carried out and at once sets about procuring a new package, going over the whole performance from the beginning.

Herb-gathering by moonlight, so important a feature in European folk medicine, seems to be no part of the Cherokee ceremonial. There are fixed regulations in regard to the preparing of the decoction, the care of the medicine during the continuance of the treatment and the disposal of what remains after the treatment is at an end. Pretenders endeavor to impose upon the ignorance of their fellows, by posing as doctors, although knowing next to nothing of the prayers and ceremonies, without which there can be no virtue in the application."

Among the Chinese, *rancæ quinquefolia* or ginseng, is given to ward off or remove fatigue, invigorate the feeble, restore exhausted animal power, to make the old young; in short to render man immortal. It is found in the mountains of Shawtung and Leotung, but now most of it is imported from this country.

Its very name, ginseng, signifies the "wonder of the world," or the dose of immortality, and directions for gathering, are upon the second, fourth and eighth moons, when the stars are said to be propitious.

An investigation will prove the common belief that the aborigines were well versed in botanic medicine to be erroneous, as most of the plants used had no medicinal virtue, and were used because of their supposed resemblance to some part or organ of the body, or again, because the priest or physician had a dream to get this certain plant, and so it became fixed in the primitive materia medica. As before stated, none of these remedies were effective until some mysterious process had been performed and certain ceremonies were executed, which had for their office the transference of power from the tutelary god to the plant. However, some remedies were used which were of great value, although all were subjected to the same ritualistic forms before using, yet a striking example of the union of both may be shown.

Since the days of Lister, we have prided ourselves upon the excellency of our surgery as compared with that prior to the advent of antiseptics, yet centuries ago antiseptics were practiced upon the then undiscovered continent of America. A

wound is inflicted upon the body of a warrior in battle, or from accident upon the chase, and several days elapse before the wounded man is brought to his camp to be treated. The loss of blood, fever, accumulation of foreign matter at the seat of injury, have resulted in the formation of pus, and possibly sloughing has already taken place; the Shaman and his assistants are summoned and the treatment begins. Beside a clear running brook a red willow grows, its roots bathed by the flowing stream. In a large caldron the fresh roots of the willow are placed and covered with water from the stream and allowed to boil, and while it is boiling the shaman tells us, that the spirit of the arrow has entered the wound which is decayed and dead, for he believes that when an animal dies worms have entered and killed it, and because he sees them crawling in the putrifying mass he concludes that the worm has entered the wound of the patient, and the flesh is dead.

The breath, which is white, is the spirit of the soul, and the blood, which is red, is the spirit of the body, and they both exist at the same time, as he well knows that when the white soul (the breath) ceases to come from the mouth, the red soul (the blood) ceases to flow from the wound, and one cannot be without the other. So he takes the water, which is also white, and which also gives life, and the roots of the red willow which is watered by the stream, and is therefore a part of it, and cannot exist without it, (due to his observing that willows grow in wet and marshy places, or along the banks of a stream), and the two make a red liquid by boiling, which resembles blood, and typifies the soul. After prayers and sacrifices, etc., to the gods, the boiling liquid, now cool, is placed in the mouth of the Shaman, and by blowing, either directly from his mouth or by use of a reed, he thoroughly cleanses the wound, and blows into it the souls, white and red, and after dressing it to prevent the spirits from coming out before they have found their lodging place, the patient is allowed to rest. Thus he places or gives back the spirits which had departed and he uses, unknowingly, an antiseptic solution, the active principle of which is salicylic acid.

The celestial bodies were supposed to have a great influence over disease, and the moon is, in nearly all languages, feminine, because of its coincidental relation to the functional activities of women, and many of the diseases of women are ascribed to the baneful influence of that body and to avoid or relieve such maladies, certain forms and rites are necessary.

Astrology accounts for many of the mysteries, both of the cause and cure of disease. The collection of herbs at certain phases of the moon, and the planting of cereals or other crops, must be upon the full of the moon, else, so they say, the fruit will turn to flower and the roots will shrivel and dry up. Moon lore is too well known to enter upon at this point, although many examples bear directly upon the question at issue.

In their system of *materia medica*, each organ had its specific remedy; thus the Chinese, in a work written centuries ago, of which the following is a literal translation, laid down this scheme: "Of all roots that are produced, the upper half of what grows in the earth is known to possess the property of ascending the system, while the lower half has that of descending; as to the power of the branches, they medicinally extend to the limbs of the body. The peel or bark has influence over the flesh and skin. The pith and substances of the tree within the trunk operate upon the viscera; that which possess light properties ascends and enters the region of the heart and lungs; that which is heavy descends and enters the region of the liver and kidneys; that which is hollow promotes perspiration; that which is solid internally attacks the internal parts of the system; that which is hot, but decayed, enters the breath; that which is mollifying enters the blood-vessels. Thus the upper and lower, the internal and external parts of a medicinal plant have each their corresponding effects on the human system."

For example: if you have a disease of the pleura or lungs, you should take the bifurcated root of the mandrake, because it looks like a man; cut out the part which corresponds to the thorax, and apply in a poultice to the chest.

For this reason fox's bones and otter's livers were given in consumption, and harts and rhinoceros' horns, tiger's and elephant's bones were excellent in extreme weakness, to strengthen and fatten the body, and a dose of tiger's bones was thought to impart courage.

In nearly every country the idea prevails that decayed teeth are due to the presence of a worm, which, as Cushing will show in an article to be shortly published, arises from their observance of worms in decaying animal and vegetable matter.

The Indian believes rheumatism to be due to a worm in the limb of the afflicted individual, or, sometimes to the spirit of slain animals, usually the deer, thirsting for vengeance on the hunter. This latter theory is clearly shown in the stories told of poisoned arrows. It is well known that early man had no knowledge of toxicology as such, but seeing persons or animals die from the effects of certain agents, thought death due to a spirit going into the man. When a man died from the bite of a rattle-snake it was believed to be the spirit of the rattle-snake entering the body which produced this result; if accordingly, one wished to destroy his enemies, he induced the spirit of the serpent to act for him by the following process: a snake was killed and the arrows or other weapons were placed in the blood in a circle, and by prayers and incantations the spirit went into the missile and could be transmitted to the body of the victim.

The treatment of rheumatism illustrates the three methods. Among the Pueblo indians, a patient crippled, drawn up and twisted by this disease, is given a decoction of the young

shoots of the fern, because, when young and tender they are curled up like the sick one, and as they grow they unfold and become straight, and therefore, they cause the partaker to unfold and become straight. But this is not all; the fern is straight, but it cannot bend forward and backward, except it be broken, and it alone, would cause the sufferer to remain forever straight—unable to bend. To remedy this, the measuring worm is given, mixed with the fern, as he not only has the power to straighten himself from his curled up position, but he can resume it again at his pleasure.

The thaumaturgic or magical method is fertile in its resources, but only one is necessary—the wearing of amulets, and cords or girdles. The use of iron crosses, rings and cords, survive to-day; and a common practice among the negros is to tie knots in a cord equal to the number of letters in the name.

The following formula and explanation for the treatment of rheumatism, among the Cherokees, is so interesting and illustrative of many points already noted, that it will be given at some length. In the prayer, reference is made to the "Great Adáwehi," which is a term used to denote one supposed to have supernatural powers, and is applied alike to human beings and to the spirits invoked in the formulas:

FORMULA FOR TREATING THE CRIPPLER (RHEUMATISM).

Listen! ha! in the sunland you repose, O red dog. O now you have swiftly drawn near to hearken. O great Adá wēhi, you never fail in anything. *O, appear and draw near running, for your prey never escapes. You are now come to remove the intruder, ha! You have settled a very small part of it far off there at the end of the earth.

Listen! ha! in the frigid land you repose, O blue dog. O now you have swiftly drawn near to hearken. O great Adá wēhi, you never fail in anything. (*Like above.)

Listen! ha! in the darkening land you repose, O black dog. (*As above.)

Listen! on Wa hala you repose, O white dog. (*As before.)

Listen! on Wa hala you repose, O white terrapin. O great Adá wēhi, you never fail in anything. Ha! It is for you to loosen its hold one the bone. (Relief is accomplished.)

Prescription: Lay a terrapin shell upon (the spot), and keep it there while the five kinds (of spirits) listen. On finishing, then blow once. Repeat four times, beginning each time from the start. On finishing the fourth time, then blow four times. Have two white beads lying in the shell, together with a little of the medicine. Don't interfere with it, but have a good deal boiling in another vessel—a bowl will do very well—and rub it on warm while treating by applying the hands. And this is the medicine: What is called Yā'na-utsē 'sta ("bear's bed", the *Aspidium aërostichoides*, or Christmas fern), and the other is called Kā'ga-Asgū 'ntagē ("Crow's shin," the *Adiantum pedatum*, or Maidenhair fern), and the other is the common Egū, nli (another fern), and the other is the Little Soft (leaved) Egū, nli (*Osmunda cinnamon*, or Cinnamon fern), which grows in the rocks, and resembles Yanā-utese-sta, and is a small and soft (leaved) Egū nli. Another has brown roots and another has black roots. The roots of all should be (used).

Begin doctoring early in the morning; let the second (application) be while the sun is still near the horizon; the third when it has risen to a considerable height (10 a. m.); the fourth when it is above at noon. This is sufficient. (The doctor) must not eat, and the patient, also, must be fasting.

EXPLANATION.—The disease, called the intruder (*ulsgéta*), is regarded as a living being, and the verbs used in speaking of it show that it is considered to be long, like a snake or fish. It is brought by the deer chief and put into the body, generally the limbs, of the hunter, who at once begins to suffer intense pain. It can be driven out only by some more powerful animal spirit which is the natural enemy of the deer, usually the dog or the wolf. These animal gods live up above beyond the seventh heaven, and are the great prototypes of which the earthy animals are only diminutive copies. They are commonly located at the four cardinal points, each of which has a peculiar formulistic name and a special color which applies to everything in the same connection. Thus the east, north, west and south are respectively the sun land, the frigid land, the darkening land, and *Wâ halâ*, while their respective mythological colors are red, blue, black and white. *Wâ halâ* is said to be a mountain far to the south. The white or red spirits are generally invoked for peace, health and other blessings, the red alone for the success of an undertaking, the blue spirits to defeat the schemes of an enemy or bring down troubles upon him, and the black to compass his death. The white and red spirits are regarded as the most powerful, and one of these two is generally called upon to accomplish the final result.

In this case the doctor first invokes the red dog in the sun land, calling him a great *Adâwehi*, to whom nothing is impossible, and who never fails to accomplish his purpose. He is addressed as if out of sight in the distance, and is implored to appear running swiftly to the help of the sick man. Then the supplication changes to an assertion, and the doctor declares that the red dog has already arrived to take the disease, and has borne away a small part of it to the uttermost ends of the earth. In the second, third and fourth paragraphs the blue dog of the frigid land, the black dog of the darkening land, and the white dog of *Wâhalâ* are successively invoked in the same terms, and each bears away a portion of the disease and disposes of it in the same way. Finally, in the fifth paragraph, the white terrapin of *Wâhalâ* is invoked. He bears off the remainder of the disease, and the doctor declares that relief is accomplished.

The connection of the terrapin in this formula is not evident, beyond the fact that he is regarded as having great influence in disease, and in this case the beads and a portion of the medicine are kept in a terrapin shell, and placed upon the diseased part while the prayer is being recited. The beads are white, symbolic of relief. * * * * *

The blowing is also a part of the treatment, the doctor either holding the medicine in his mouth and blowing it upon the patient, or, as seems to be the case here, applying the medicine by rubbing and blowing his breath upon the spot afterwards. In some cases the simple blowing of the breath constitutes the whole treatment. * * * * *

The medicine consists of a warm decoction of the roots of four varieties of fern rubbed on with the hand. The awkward description of the species shows how limited is the Indian's power of botanic classification.

The application is repeated four times during the same morning, beginning just at daybreak and ending at noon. Four is the sacred number running through every detail of these formulas, there being commonly four spirits invoked in four paragraphs, four blowings, with four final blows, four herbs in the decoction, four applications and frequently four days tabu. In this case no tabu is specified, beyond the fact that both doctor and patient must be fasting. The tabu generally extends to salt or lye, hot food, etc., while in rheumatism some doctors forbid the patient to eat the foot or leg of any animal, the reason given being that the limbs are generally the seat of the disease. For a similar reason the patient is also forbidden to eat, or even touch, a squirrel, a buffalo, a cat, or any animal which humps itself. In the same way a scrofulous patient must not eat turkey, as that bird seems to have a scrofulous eruption on its head, while ball-players must abstain from eating frogs, because the bones of that animal are brittle and easily broken.

Reification.—There comes a time in the civilization of every nation when medicine and religion are divorced. For one or

another reason, usually peculiar to each individual community, there is a breaking away from the ecclesiastical powers, which hold all knowledge within its jealous embrace, and the people learn to investigate for themselves. The old superstitions and beliefs of supernatural powers in man give way before the evidence to the contrary in the physical world. This is the time when men go to the other extreme and say everything was created for a purpose, and they gather together a vast collection of half truths, due to erroneous and imperfect methods of investigation, and necessarily place a wrong construction upon them.

This accounts for the impetus given to the study of medicine in Europe in the middle ages, but we find centuries later that a thousand years before the Christian era, in China, almost the same ideas existed, just as the independent discovery of printing and the art of making gunpowder. They believed that the body was composed of water, fire, wood, metal and earth, the five elements of which everything was composed. So long as the equilibrium was maintained between them the person enjoyed health; as soon as one predominated sickness ensued. To discover and then counteract that which predominated was the treatment. Inflammation was due to excess of fire. Distortion of eye and mouth was due to the excess of wood over metal, which contracted the muscles. Under such circumstances earth discharged its nature, its powers relaxed in the intestines, the eyes became hollow and muscles contorted. Their knowledge of anatomy was slight and superficial, reverence for the dead forbidding dissection until a much later period; their only knowledge was derived from animals, and curious enough, this same respect gave them a knowledge of osteology, as the bones were often arranged and preserved with scrupulous care by relatives and friends. The great viscera of chest and abdomen were known, but their relative positions were not. The heart was supposed to lie on the right side and the liver on the left. The circulation of the blood was known, but they were ignorant of the part played by the lungs in its purification.

Throughout the human body a vivifying ethereal fluid was transfused, which was called *Ke*, and resembled the ether of nature. According to the best ancient authors, water entered the body through the mouth. Beside the natural way of evacuation, it was either absorbed during cold weather by the *Ke*, or in hot weather it came out as perspiration; when grief oppressed the mind, it appeared in shape of tears or was given out as saliva.

When the *Ke* was vitiated its ejection was obstructed, it accumulated, and dropsy resulted, and a cure was effected by evacuation of water.

Their imperfect knowledge of the circulation gave rise to one of their most singular notions,—the doctrine of the pulse.

The native physicians now say that owing to their delicacy of touch they can distinguish no less than 24 different kinds of pulse, viz., hard, soft, wiry, intermittent, and declare that for every part of the body there is a pulse peculiar to that particular locality. In the arm there are three,—the inch, the bar and the cubit; the liver has its pulse located in the right wrist, while the left governs the heart, and by examining the pulse in various parts of the body, they can tell the disease and its cure; also, whether a woman will give offspring, and whether it will be male or female. Among the Turks and other Mohammedan people a similar doctrine is found.

The nose is the part of an embryo which is first formed, hence, in literature, the nose-ancestor was the designation of the original founder of a family.

Plato and Proclus had faith in the pentad or five principals of nature, the five planets known to them presided over the five viscera, the five elements, five colors and five senses.

Mars was hot and dry — medicine bitter, red in color, affected the heart.

Green medicine came from wood and operated on the liver.

Red medicine came from fire and operated on the heart.

Yellow medicine came from earth and operated on the stomach.

White medicine came from metal and operated on the lungs.

Black medicine came from water and operated on the kidneys.

The pentad and duad were the mysterious numbers of the Chinese, as well as of many other nations. The yang and yin, or male and female energies in nature, the active and passive agents, form an important part in every department of Chinese learning, for they believe every phenomenon can be explained by these obscure and awful principles.

Yang, or male principle, is hot, cold, warm or cooling; yin, or female energy, is sour, sweet, acid or salt. The blood is of two kinds, yang, or arterial, and yin, or venous; the first is strong, the latter is slight; the yang circulates throughout the body, while yin nourishes the soul and most of the bones and sinews.

Galen and Paracelsus, while retaining many of the beliefs noted in imputation, started on the long journey toward truth, and reached the stage of reification, and their investigations and teachings left their impress for many generations.

They believed the brain to be a cold, inert gland, whose function was to secrete phlegm. The heart sent forth animal spirits, and the body was composed of four fluids,—bile, blood, atrabile and phlegm.

Galen explained functional acts by forces or faculties; for example: food is conveyed to the stomach by an attractive faculty, is kept there by a retentive faculty, until it is converted into chyme by an alterative faculty, made to pass into the duodenum by an expulsive faculty, to be taken up by the veins and carried to the liver, where it was converted into blood by a blood-making faculty.

The four systems of Asellius became wide-spread in their influence,—the chemical, the intro-mechanical, spiritual and vital. There were five crises in the chemical,—*ens australe*, or influence of the stars; *ens veneui*, or poisonous principles of food and drugs; *ens naturale*, or force which directs the microcosm; *ens spirituale*, or spiritual principle, whose action is seen in sympathy and antipathy; *ens dei*, the Spirit of God, which sends disease as a chastisement.

An analogous doctrine is found in the five principles of the Hindoos—the elements of earth, air, fire, water and ether, from which the ancient philosophers of Greece derived their doctrine of the elements.

It must be borne in mind that the spirits referred to in this connexion are not the same as were mentioned under the first two subdivisions, but are regarded as a physical or tangible force.

Although much of the imputed in medicines remained, yet it had a different signification; while the lights of a fox in wine (the fox being long-winded), or bear's gall in water, was of great virtue in asthma, and wine in which the feet of a yellow hen had been washed, was a sure cure for jaundice, the remedies were regarded as having something of definite action of a physiological or chemical nature, the exact character of which was not definitely understood.

Empiricism was in the heyday of its success, everything was used that could be used, and the extent and variety were simply appalling. Wolf's liver steeped in wine for cough, cow's blood in vinegar for spitting of blood, burnt deer's horn for fluxes; phrenitis was cured by attaching a sheep's lights, while yet warm, to the patient's neck.

Diseases of the ear were treated with wormwood, rue ants, earth-worms steeped in vinegar, and eel's blood boiled in wine. Moss from the skulls of animals, and the powdered thigh-bone of noted criminals were in high repute. The following prescription of Paracelsus, known as Paracelsus' plaster, would be a boon to dermatologists in curing malignant growths, but unfortunately its method of preparation has become one of the lost arts:

- R. Take a quintessence of all of the gums in the world.... $\frac{1}{4}$ lb.
 Magistery of the magnet..... 6 oz.
 Elements of the fire of Awks (*i. e.*, the electrical fluid)... 1 lb.

And of such great strength was it, that it was known to have pulled rocks of some size from their bed in the soil.

There remains in the people a belief in the efficacy of drugs as drugs—a belief that for every bane there must be an antidote, so for every disease there must be a curative leaf or root.

From this step to the last an imperceptible change takes place, a gradual accumulation of indubitable facts brings us to that stage where all is demonstrated, all is logical, all is final, as far as it is possible to carry human inquiry, and the ques-

tioner is stilled, for all his questions are answered, or if not answered, he is satisfied that he is in the right path, and by diligent pursuit, will eventually reach the goal.

This is the fourth or scientific stage.

Scientific Explanation.—What need be said further upon this point? Its history is our own history; its work is what we have and are doing; its aim, scope and outlines are well-defined. We have but to correct the errors of the past and demonstrate things as they are.

Let us now recapitulate. We have endeavored to trace human thought from its very beginning, and to show its correlation to the culture status, and that culture concepts are the results of such mental evolution.

First—Thought is a physiological function, and is ever the same under similar environments.

Second—Thought traverses a certain well-defined scale, which is known and recognized by its methods of interpretation, and they are Imputation, Personification, Reification and Scientific.

Third—This psychologic development is everywhere and at all times the same, and is independent in such development.

Fourth—That culture concepts are the result and not the cause of such an evolution.

Fifth—That analogies in culture are due to such psychologic development.

This brings us back to the original proposition which we sought to prove, or, as Herbert Spencer puts it: "Their endless variety serves but to strengthen this conclusion, showing, as it does, a more or less independent genesis—showing how, in different places and times, like conditions have led to similar trains of thought, ending with analogous results."

EARLY AMERICAN EXPLORATIONS AMONG THE PUEBLOS.

BY STEPHEN D. PEET.

It is interesting and fascinating to read about the explorations of the Spaniards among the Pueblos, and to trace their routes through the mountainous country in which they were situated. Yet, there was very much of the Pueblo region which they did not reach, and it remained for the American explorers who entered the region 200 years later to re-discover the houses of the Pueblos and to make known the existence of the Cliff-dwellings.

The fact that the country contained archæological remains of great interest was, to be sure, known during this interval, but they seemed to have been lost sight of until these later explorations brought them to mind.

There were about 65 inhabited dwelling places which the Spanish invaders reached, 35 of which have been identified as named in the Spanish Chronicles; these, however, were only of one kind, and were situated only along one line or route, the route which the Spaniards took. The number of the structures of the Pueblos and Cliff dwellers have been immensely increased by the discoveries which have been made since that time. These are scattered over the wide region which is embraced within the limits of the Great Plateau, but may be divided into several classes, each class being distinguished by a peculiar type of architecture and situated within a particular district.*

The following is a list of the districts arranged in a geographical order, with the peculiarities of the structures in each briefly mentioned:

1. The eastern district is situated on the Rio Grande and on the Pecos River, and includes a large number of pueblos, the distinguishing peculiarities of which were that they were located upon lofty mesas, and were, in a measure, isolated from one another, the arrangement for defense for irrigation and permanent occupation being concentrated into one single great community.¹

* Mr. A. F. Bandelier says: The northern limits of the region of the housebuilders remains yet to be definitely established. We only know that Southwestern Colorado and South-eastern Utah harbor many well-preserved ruins; the eastern limits seem to be the meridian of the Pecos River; the western, the Great Colorado, and further south, the dismal shores of the Gulf of California.

NOTE—This division follows the river system, thus showing that the tribes dwelt upon the different rivers.

See I.

Nos. 1, 2, 3, 4 and 5 on Map.

¹ This includes Taos on the north, Isleta on the south, Pecos on the east, and Ojo Caliente on the west; also, the villages of the Queres, which have been called by Mr. Charles F. Lummis, the "forgotten cities" of the south-east, the names of which are Abo, Cuaraí Tabira. See *Land of the Poco Tempo*, p. 285.

2. The second district is the one situated in the valleys of the Chaco, the McElmo and Canon de Chelly. It is distinguished for the number of abandoned pueblos, the ruins of which are arranged in clusters, and stretch along the valleys of the streams. They show that they were once occupied by a numerous agricultural population.²

3. The northern district is situated in the valley of the San Juan. It is distinguished for the remarkable Cliff-dwellings found on the sides of the deep canons, especially in the Mancos Canon, Montezuma Canon and Navajo Canon, all of which are in the region of the Sierra Madre.³

4. The central province is situated in the region of Fort Wingate and Fort Defiance.⁴ It stretches from Mt. Taylor and San Mateo on the east, to the Moqui Mesa on the west. It is drained by the Colorado, Chiquito and the Little Colorado, and is distinguished for a large number of many-storied houses, called pueblos, of which the pueblos of the Zuni are good specimens.*

5. The westernmost district is situated upon the Gila river and the Salt river in Arizona. It is distinguished for the ruins of buildings built in a checker-board fashion, and for its extensive irrigating canals.⁵

6. The southernmost district is situated on the lower part of the Rio Grande and on the head waters of the Gila River, and stretches as far west as the borders of Mexico. It is distinguished for the great number of Cavate dwellings and small houses which are connected with the ruins of pueblos of a peculiar class, the best specimens of which are situated west of the Rio Grande.⁶

The American exploration of this region began after the time of the purchase from the Spanish and the settlement of the Mexican Boundary, and has continued up to the present time, new and important discoveries having been made as new expeditions were sent out. These expeditions may be divided into several series.

The first embraces the expeditions which were conducted by the earliest commercial travelers and traders, such as J. W. Gregg and others.

The second began with the expedition sent out by the government, under Genl. Simpson, to examine the condition of the Navajo Indians, and may be said to end with the survey of the route for the Pacific Railroad. This series of explorations

² See II, Nos. 6 and 7.

³ See III, Nos. 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19.

⁴ See IV, Nos. 8, 9-20, 21 and 22 on Map.

⁵ See V, No. 30, on map.

⁶ See VI, No. 24.

* These have been visited by Major J.W. Powell, A. F. Bandelier and others, and are known to be the home of the Queres, the history of whose wanderings is given by Mr. Lummis. The stone pumas, which have excited so much attention, are situated in this district.

brought to view the eastern and central portion of the great Pueblo region, but did not make known the existence of the Cliff-dwellings as such.

The third series began with the expeditions under Major Whipple and Lieut. Ives, but continued after the organization of the Ethnological Bureau in 1878-9. This brought into special prominence the pueblos of the Zunis, but also included the region on the Colorado River.

The fourth series began with the organization of the Geological Survey, under Prof. J. V. Hayden and Major Wheeler, and resulted in the full discovery of the Cliff-dwellings of the Mancos Canon.

The fifth series was carried on under the auspices of the Archæological Institute of America, and was conducted by Mr. A. F. Bandelier, who brought much information in reference to the Cave-dwellings in the southern portion of the pueblo district.

The sixth series is one which was started with the organization of the Hemenway Expedition, and included the various reports made by F. H. Cushing, J. Walter Fewkes and Dr. Washington Matthews. The localities visited included the ruins on the Gila River and the Tusayan Pueblos and some others. Much information resulted from it.

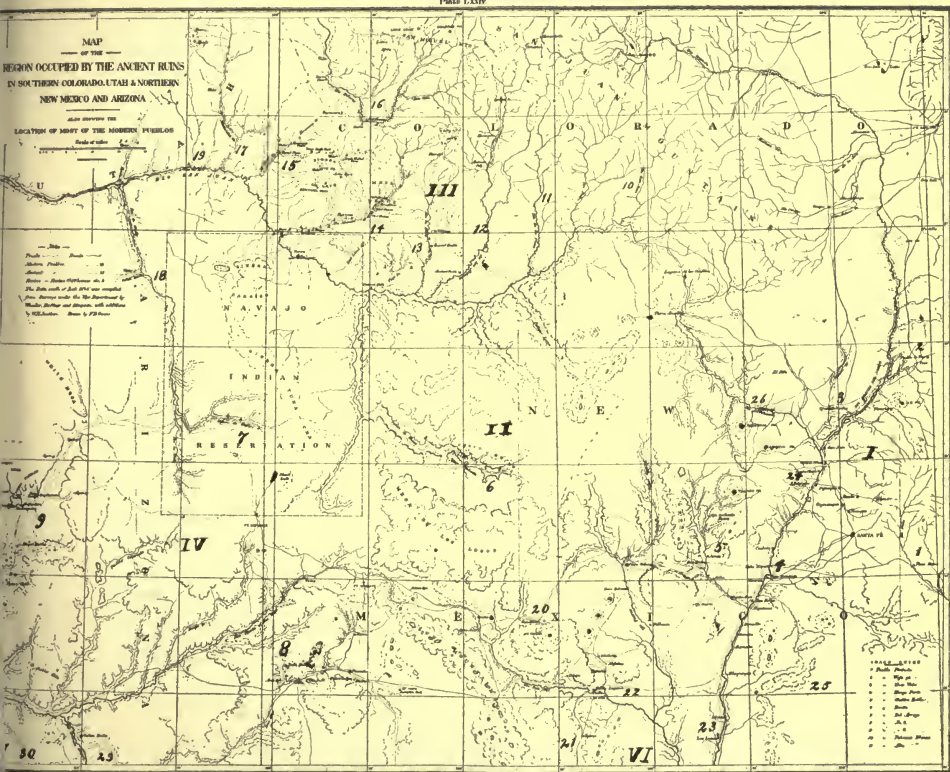
The last series consists of the exploration of private individuals, who, at their own expense, have visited the regions of the Cliff-dwellers and have written books, which have been published in this country and in Europe, Mr. F. H. Chapin, Dr. Beardsall, Mr. G. Nordenskjold, Mr. C. F. Lummis and others being the chief.

We propose to take these expeditions in their order and to speak of the results which were gained, giving special attention to the Pueblos and ruined structures which were discovered in the different districts.

We shall devote this paper to the early American expeditions; namely, those which were sent out about fifty years ago, before anything was known of the country or of the marvelous ruins which it contained.

These early explorers did not reach the northern district, the district in which the cliff dwellings were situated, nor did they reach the southern district, the district in which the cave dwellings were found. But they did traverse the districts in which the largest and most noteworthy pueblos were situated, and their reports are important, inasmuch as they give a means of comparing the Pueblos with one another, and ascertaining something in reference to their antiquity and history.

It is to be noticed that the first expeditions in the series began exploring on the east side of the Rio Grande and so covered the region that has already been described; but the later in the series began on the Colorado river and worked eastward, included all of the region drained by that river.



MAP OF THE PUEBLO REGION

- I. Pueblos on the Río Grande: 1 Pecos; 2 Taos; 3 San Juan; 4 San Domingo; 5 Jemez.
 II. Ruined Pueblos on Chaco Canon, marked 6; on Río de Chelly, 7; on the Chamas, 26.
 III. Cliff Dwellings on the La Plata: 1, Animas River; 12; on the Mancos Canon, 13; 14;
 on the Hovenweep, 15; Dolores, 16; on the MacElmo, 17; Casa del Eco, 19.
 IV. Pueblos of the Zunis, 8, of the Modquis, 9.
 V. Ruins of Casa Grande and Irrigating Canals on the Gila, 30.
 VI. Cave Dwellings on the Río Grande, 20, 21, 22 and 23; and on the Colorado Chiquito,
 28 and 29.



INDIAN MAP OF RIO GRANDE

Gran Quivira is situated southeast of Chilili. Chaco Canon is west of Picures. The Cliff Dwellings of the San Juan west of Shipapu. There are many cave dwellings just west of Santa Clara.

The descriptions furnished have reference to the pueblos which are situated in what we call the central provinces, though there were three separate routes marked out by the expeditions in the process of reaching them.¹

1. We begin with the explorations of the easternmost district, namely that situated in the Rio Grande.

The first one to describe the pueblos of this region was Mr. Josiah Gregg, who led eight expeditions across the great western prairies for the purpose of trade, and who lived nearly nine years in Northern New Mexico. The routes which he followed were across the southern part of the Pueblo Territory, reaching from San Jose on the Rio Pecos to Santa Fe on the Rio Grande, and from thence through Ojo Caliente, in New Mexico, to Chihuahua, Mexico, in the opposite direction from that which was followed by Coronado. His descriptions relate to the pueblos in the eastern part of Colorado, including Pecos, Taos, San Domingo Isleta San Felipe.²

He says:

Ancient ruins are now to be seen scattered in every quarter of the territory. Of some, entire stone walls are yet standing, while others are nearly obliterated. Each pueblo is under the control of a cacique, chosen from among their own sages and commissioned by the governor of New Mexico. The cacique, when any public business is transacted, collects together the principal chiefs of the pueblo in an estufa and laying before them the subject of debate, which is generally settled by a majority.

The Pueblo villages are generally built with more regularity than those of the Mexicans, and are constructed of the same materials as were used by them in the most primitive ages. A very curious feature in these buildings is, that there is most generally no direct communication between the street and the lower rooms, into which they descend by a trap-door from the upper story, the latter being accessible by means of ladders. Even the entrance to the upper stories is frequently at the roof.

Though this was their most usual style of architecture, there still exists the Pueblo of Taos, composed, for the most part, of but two edifices of very singular structure—one on each side of a creek, and formerly communicating by a bridge. The base story is a mass of near four hundred feet long, a hundred and fifty wide, and divided into numerous apartments, upon which other tiers of rooms are built, one above another, drawn in by regular grades, forming a pyramidal pile fifty or sixty feet high, and comprising some six or eight stories. The outer rooms only seem to be used for dwellings, and are lighted by little windows in the sides, but are

¹ The Indian tribes that inhabited the high lands between Rio del Norte (Rio Grande) and Pecos are those at Pecos, Cienega, Galisteo, known anciently as Tiguas. Those of Taos, Picuris, Isleta speak what has been called the Piro language. A large portion of the others—Santa Clara, Nambe, Tezuque—speak Tegua, those of Cochiti, Santo Domingo and San Felipe are distinguished as Queres. The population of these Pueblos will average nearly 500 souls, each making an aggregate of 9,000 or 10,000. At the time of the original conquest, in the sixteenth century, they were much more numerous.

² Oscar Loew locates the provinces according to languages, and gives them the modern Indian names as follows: *Taos*, and *Picuris* represented by two pueblos. *Querez*, five pueblos between the Rio Jemez and the Rio Grande. Ruins near Silla and San Felipe, *Tehuia*, six villages on the Rio Grande, eighty miles below the present seat. *Quivira*, adjacent to the Manzana mountains, three villages. *Tanos*, a region on the Placer and Sandia mountains on the Rio Grande below Albuquerque. Ruins at San Marcos, San Jose, San Lazaro, Los Tanques, and Shinana. *Tutahaco*, eight cities southeast of Mt. Taylor. Five pueblos and several towns in ruins on the Rito San Jose, west of Laguna. *Tigue*, in the valley of the Rio Puerco northeast of the former. Castaneda reports twelve cities in this province, at present no pueblo exists there. *Cibola*, seven Zuni towns, four in ruins. *Tusayan*, six Moqui towns. *Aztlán*, the ruins of Cliff-dwellings on the Rio San Juan. Ruins are found here and there on the Rio Gila, Rio Francisco, Rito Blanco, Rito Bonito.

entered through trap-doors in the roofs. Most of the inner apartments are employed as granaries and store-rooms, but a spacious hall in the centre of the mass, known as the *estufa*, is reserved for their secret councils. These two buildings afford habitations, as is said, for over six hundred souls. There is likewise an edifice in the Pueblo of Picuries of the same class, and some of those of Moqui are also said to be similar. Some of these villages were built upon rocky eminences deemed almost inaccessible; witness, for instance, the ruins of the ancient Pueblo of San Felipe, which may be seen towering upon the very verge of a precipice several hundred feet high, whose base is washed by the swift current of the Rio del Norte. The still existing Pueblo of Acoma also stands upon an isolated mound, whose whole area is occupied by the village, being fringed all round by a precipitous cliff.¹

Several gentlemen have visited this region since the time that Gregg made his expeditions, and have given descriptions of the pueblos contained in it.

We shall quote the descriptions which they have written of the different villages, taking them in their geographical order.

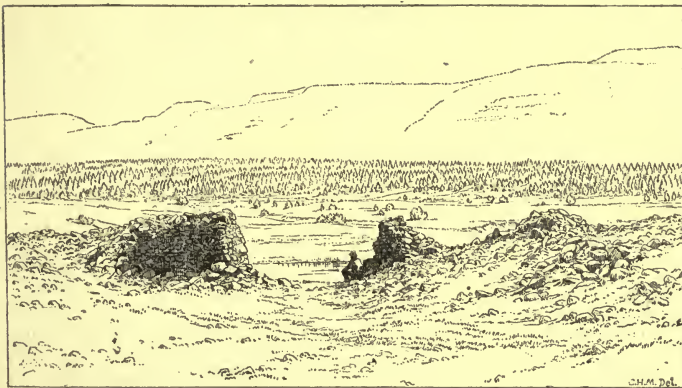
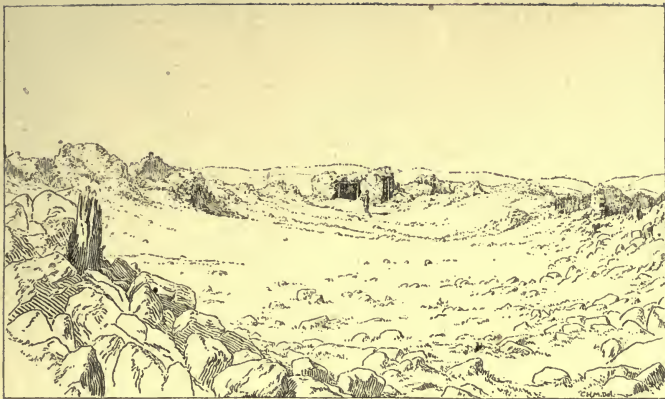
1. The first which comes to notice is the village of Pecos. This has been described by Mr. A. F. Bandelier, who visited it in 1877, and made measurements of all the parts, and furnished a full account of the ruins. The points which he brought out were as follows: (1) There was a great enclosure which served as a reservoir, which held and conducted the water precipitated on the Mesa to the useful purpose of irrigating the fields situated below the Mesa. (2) The buildings which surrounded the enclosure and surmounted the Mesa served as a defense, as its walls formed an obstruction to a storming foe and a permanent abode for the defenders. (3) It was an admirable place, well adapted for a permanent occupation. He says:

My survey of the ground occupied by the aboriginal ruins in the valley of the Pecos indicates three epochs. 1st, The Pre-Traditional; 2nd, Traditional; 3rd, Documentary. The indented pottery, similar to that found in the Cliff-dwellings of the Rio Mancos, belonged to the first period; the painted, figured and vitrified belongs to the second. The old ruins of Pecos were abandoned and decayed in 1840. The sacred embers of the sacred fire were returned to Montezuma. It is positively asserted that the Pecos adored an enormous rattlesnake, and it is hinted that human sacrifices were associated with this hideous cult. Irrigation was the common method of cultivating the soil—special provisions were made for it. There was a wall of protection around the pueblo 3,225 feet in circuit, within which the soil was cultivated, and the inhabitants could simply shut themselves up in safety. The young men could leave the pueblo at times in a body. There were mounds near the Great Gate, and watch-towers for special purposes, and look-outs on the wall tops. The mounds, towers, walls and houses composed a system of defenses which was wonderfully adapted against the approach of the stealthy, lurking foe.

The various walls have little strength within themselves, but combined together they oppose to any outside pressure, an immense amount of "inertia." There is not in the whole building one single evidence of any great progress in mechanics. Everything done and built within it, can be built and made with the use of a good or fair eyesight only, and the implements and arts of what was formerly called the "Stone Age." This does not exclude the possibility that they had made a certain advance in mechanical agencies.²

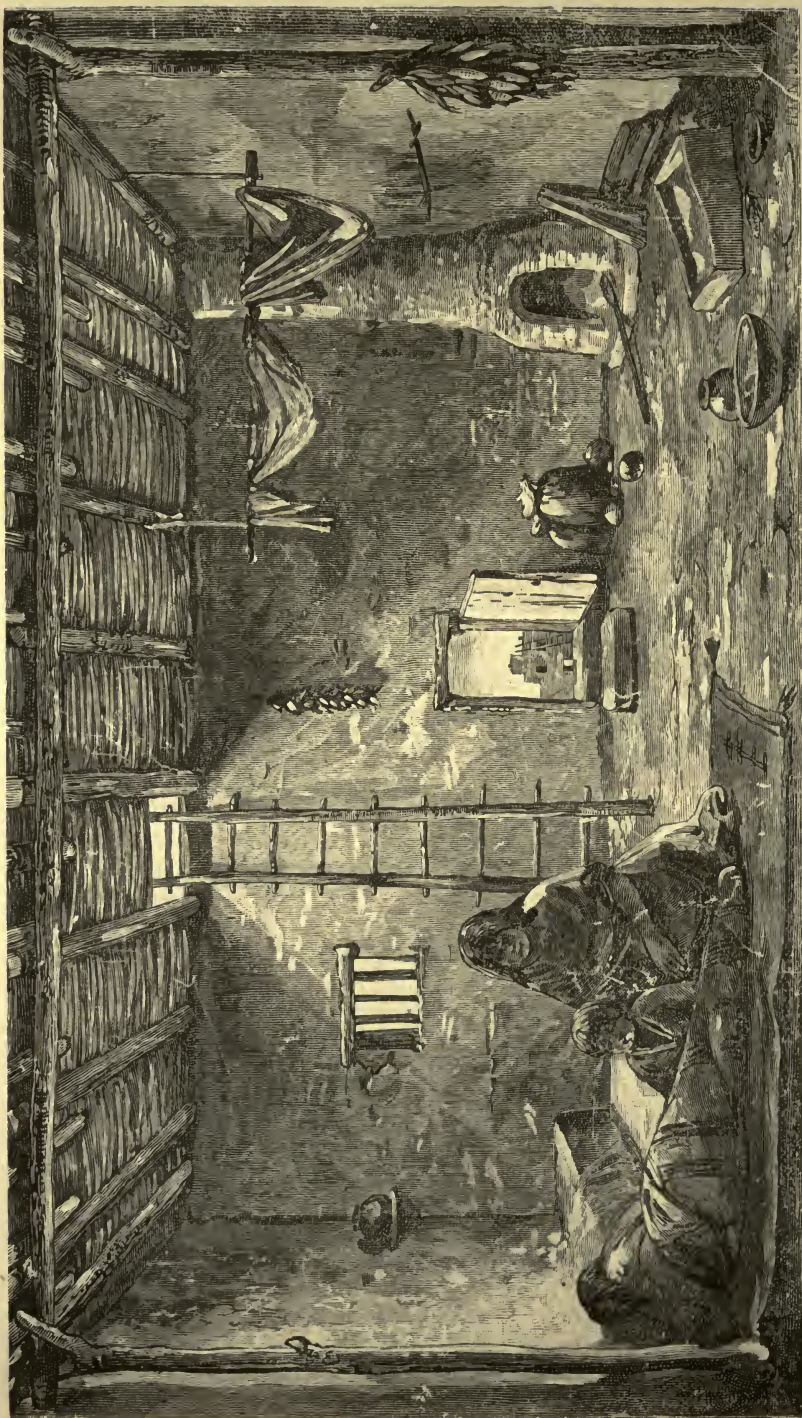
¹ Gregg's *Commerce of the Prairies*, Vol. I, page 276.

² See Report of Archaeological Institute of America, Vol I, p. 65.



VIEW OF THE RUINS AT PECOS

1. Ruins of buildings and the central area.
2. Channel for draining the area through the gateway and the reservoir from which the fields were irrigated.
3. Gateway to the enclosure.



INSIDE VIEW OF A HOUSE AT TAOS

The Pecos Indians live together, build their houses together and raise their crops in one common field, irrigate their crops from one common source, which gathers its moisture from the inhabited surface of the Pueblo grounds. I have already stated that the Messilla slopes to the south-west, and there is a depression along the northern end, and that here the rocks bulge upwards again, all of which contribute to the drainage of the entire cliff top into the hollow where the gate into the general enclosure is placed; this gate, therefore, was not only a passage-way, but also the water gap, or channel, through which the water was finally drained into the Arroyo de Pecos. It will be seen, according to the ground plan, the east wing had five stories, the north two, the west two and the south four; looking at the building from the "great court," the south presented an unbroken front of a two-story wall, the east, successively, four, two and three stories, the north formed two, the west sides from north to south two, three and four terraces. In this manner, not only was the building remarkably well accommodated to the irregularities of the surface, but even a tolerably uniform height was attained, well agreeing with the description of Castaneda: "The houses are four stories, terraced all the same height, along which one may make the circuit of the entire village without meeting any street to intercept the passage." There is an enclosed area below the village, which was the former *Huerto del Pueblo*, "the fields of the inhabitants of the Pueblo," where they planted and raised Indian corn, beans, calabashes, squash, etc. Through the gateway the drainage of the Messilla was conducted directly to the platform with a pond in the centre, which acted as a reservoir, out of which the fields themselves could be easily supplied with water.

2. Taos¹ is another pueblo which belongs to the eastern district. It has been described by several explorers, and among them Mr. Bandelier,² who says:

Taos, with the ruins in the Sierra, and Picures constituted the extreme northeastern corner of the Pueblo territory in ancient times as well as to-day.³

I made but two visits to Taos. It is almost certain it is what the Spaniards called *Valladolid*. Castaneda writes of it as follows: "It was built on both sides of the river, which was crossed by bridges, which were constructed by very well hewn beams of pine timber. Valladolid is the last one in ascending towards the northeast." Taos, built on both sides of the swift and cool Taos, is the only village in New Mexico which corresponds with Castaneda's description.

The engravings furnished by Mr. Bandelier of this pueblo represents it as built in the pyramidal style, the middle part being the highest, and the other parts arranged in terraces on all sides.

Mr. C. F. Lummis says:³

Taos is the most striking example left of the great-house town. Its two villages, one on either side of the rippling trout brook, are, as Coronado found them, each of a huge six story pyramid house.⁴

The best description is given by Mr. L. H. Morgan.⁵ He says:

The two structures stand about 25 rods apart on opposite sides of the stream and facing each other. That upon the north side is about 250 feet long and 130 feet deep and five stories high; that on the south side is shorter and deeper and six stories high. The present population is about 400, divided between the two houses. Upon the east side there is an adobe

¹ See Indian map of Rio Grande.

² See Final Report of Bandelier, Part II, pp. 31.

³ Mr. C. F. Lummis says that Taos and Isleta mark the northern and southern extremes of the present Pueblo range. Between these Tigua towns are eleven villages of the Tehuas and the Queres.

⁴ For location of Taos, see Map No. 2; of Santa Domingo, No. 4; of Jemez, No. 5; of Isleta, No. 23; Tabira, No. 25; San Felipe and Bernalillo are between 4 and 23; Picuris is on the east side of the Rio Grande opposite Ojos Caliente.

⁵ For Plate of Taos see Morgan's "House and House Life."

wall connecting the two buildings and protecting the open space. The creek is bordered on both sides by ample fields and gardens, which are irrigated by canals drawing water from the stream. The first stories are built up solid, those above are built in a terraced form; several stories are reached by ladders, the rooms are entered by trap-doors. The lower rooms are used for storage and granaries, and the upper for living rooms, the families living above owning and controlling the rooms below. Several rooms were measured, and found to be in feet 14x18, 20x22 and 24x27, the height of the ceiling from 7 to 8 feet. In the second story they measured 14x23, 12x20 and 15x20. The back rooms have usually one or more round holes made through the walls, from 6 to 8 inches in diameter, these furnish the apartment with a scanty supply of light and air. The ground rooms are usually without doors or windows, their only entrance being through the scuttle-holes which are in the rooms comprising the story above. The rooms located in the front part of the house receive the light from the doors and windows; the back rooms have no other light than that which goes through the scuttle-holes or holes in the wall, and they are always gloomy. The representation of a room in this pueblo is from a sketch by Mr. Galbraith, who accompanied Major Powell's party. There are fire-places in this room, a modern invention. [See Plate.]

There is room in each of the two buildings to accommodate 500 people. They were occupied in 1864 by 361 Taos Indians. From the best information attainable, the original buildings were not erected all at one time, but added to from time to time.

3. The Pueblo of Ojos Caliente should be included in this district, though a distance of nearly 40 miles separates Ojos Caliente from the Taos Valley. Taos lies 6,983 feet above the sea, Ojos Caliente is 700 feet lower. Mr. Bandelier says:

Three of the largest pueblos of New Mexico, Colorado and Arizona lie on the banks of this stream within a mile and a half of each other. The three pueblos, called Houiri, Homayo, Poseuingge, are specimens of a kind which are very common. The structures of which they are composed are in most cases arranged so as to surround an interior court. The situation of Homayo is very favorable for defense. The pueblo stood higher than its immediate surroundings, and had an exceptionally good outlook to the south and north. The garden plots are noticeable here. Of these there are two varieties. One comprises rows of stones arranged in a checker-board fashion on levels, the other has the beds or plots arranged in terraces on slopes. About five miles from this place lies a very large pueblo ruin, called Sepaue, which the Tehuas claim as one of their ancient settlements. Here are a number of garden plots which lie on a level and at the same elevation above the stream as the pueblo, but separated from it by a gorge.*

Mr. W. H. Holmes has given a description of the ruins of Ojos Caliente, and has shown that this pueblo resembled the others which have been described. The following is his language:

It occurs on a high, almost isolated, fragment of terrace near Caliente Creek. It has been constructed chiefly of adobe, and has consisted of rows of apartments surrounding a number of large open courts. Individual walls cannot be traced, and the rows of houses are reduced to smooth rounded ridges of earth. These are indicated on the plan, and are often as much as 8 feet high and 30 feet wide at the base. The courts contain a number of small circles, or mounds (*a a*), and the single estufa is identical in appearance with those among the ruins of Colorado.*

4. Santo Domingo is another pueblo belonging to the Rio Grande district. It is situated far to the south of Ojos Caliente on the Rio Grande river. It was visited by General Simpson, and was described by him in the following language:

* See Plate XLI in Hayden's Report for 1876.

Santa Domingo, which lies on the Rio Grande, is a pueblo, or Indian town, containing about 800 inhabitants. It is laid out in streets running perpendicularly to the Rio Grande. The houses are constructed of adobes, and have roofs which are nearly flat. These roofs are made first of transverse logs, which pitch very slightly outward, and are sustained at their ends by the side walls of the building; on these a layer of slabs or brush are laid longitudinally; a layer of bark or straw is then laid on these, and covering the whole is a layer of mud of six or more inches in thickness. The height of the stories is about eight or nine feet. The lower stories have very small windows and no doors; the lights of the windows, wherever there were any, being of selenite — the crystalized foliated form of gypsum. The mode of access to the building is by exterior ladders, which may be seen leaning against every house.

In the west end of the town is an estufa, or public building, in which the people hold their religious and political meetings. The structure, which is built of adobes, is circular in plan, about nine feet in elevation and thirty-five feet in diameter, and with no doors or windows laterally. It has a small trap-door in the terrace, or roof, by which admission is gained.

5. Jemez is another village of this district. It is situated to the west of the Rio Grande, not far from San Domingo, on the eastern slope of the mountains. General Simpson describes it as follows.

The pueblo of Jemez, as its prefix indicates, is an Indian town of probably between four and five hundred inhabitants, and, like the pueblo of Santa Domingo, is built upon two or three parallel streets, the houses being of adobe construction, and having second stories disposed retreatingly on the first, to which access is had by ladders.

Oscar Loëw also visited Jemez, and says of it:

Jemez is one of the most prosperous towns in New Mexico, having fine fields, large irrigating ditches, and extensive flocks of sheep. A ride six miles up the river brought us to the junction of the two great cañons — Guadalupe and San Diego. Here were the ruins of two pueblos, one upon the lower prominence of the Mesa, and the other upon the Mesa proper, only approachable by two narrow steep trails, the Mesa being nearly everywhere else perpendicular and 750 feet high. The view from the Mesa is picturesque and imposing in the extreme. Upon the narrow width of the Mesa, near frightful precipices, are the ruins of a town of eight houses, partly in parallel rows and partly in squares and partly perched between the overhanging rocks. Nearly every house had one story and two rooms. The building material was trachytic rock found upon the Mesa. Broken pottery, charred corn and millstones for grinding corn were found in some of the rooms. Upon asking my Indian guide whether the former inhabitants of this town were obliged to descend the steep and dangerous pathway every day to the creek to procure water, he replied "that there were cisterns on the Mesa in which rain was formerly plentifully caught. It may be added with regard to the number of pueblos at the present day, that they hardly number more than 800 souls.

II. We now turn to the second series of exploration; a series which was conducted under the auspices of the United States Government, the reports of which are contained in the documents published by Congress. These explorations cover nearly all of the ground which was traversed by the Spaniards, and resulted in the rediscovery of the Pueblos which they first described; also, in the discovery of certain Pueblos in the Chaco, cañon, which were not reached and which were in ruins at the time.

The Cañon de Chaco commences about 110 miles northwest from Santo Domingo on the Rio Grande. It has enough of the

characteristics of a cañon to justify the term, but it differs from other cañons in the lowness of the bordering walls and in the great breadth of the space between. The level plain between the encompassing walls ranges from a half mile to a mile in places, and the cliffs on either side vary from fifty to one hundred feet in height.

The cañon commences in southwestern Colorado and runs northwest into the San Juan, and drains the Sierra Madre, and runs parallel with the Rio de Chelly, which is about ninety miles west of it.

The ruins are 75 miles north of Zuni Pueblos, and 79 miles southeast of the cliff dwellings of the San Juan, and very near the Navajo country. This location shows that they were once the seat of important settlements and a great centre of population.

The soil in the Cañon de Chaco, though now very arid, seems to possess the elements of fertility, and probably, when the ruined pueblos along its course were instinct with life, it was cultivated.

The cañon is indeed a wonderful exhibition of nature and will always command the admiration of its votaries, as it will the attention of the geologists. But it differs very much from the other canyons, such as the Mancos and MacElmo, in that its walls are much lower and the mouth of the cañon is soon reached. The ruins extend throughout its whole length.

The person who did the most to awaken geographical interest in this region was Gen. J. H. Simpson,¹ who was connected with the expedition sent out by the government to visit the Navajos in their reservation in 1846-7-8.²

He started from Santa Fé, east of the Rio Grande, and crossed that river at Santa Domingo, where were formerly pueblos. He reached the Jemez River and visited the pueblos situated there, and noticed the ruins of Ojo Calientes. He crossed the head waters of the Rio Puercos, finally entered the Valley of Rio Chaco, and visited the series of remarkable Pueblos in the Cañon Chaco³. He was the first to bring to light these wonderful ruins, and his account is of general interest.

From this cañon he passed on to the peaks of the Ojo Calientes, and finally reached the Cañon de Chelly,⁴ where many more interesting ruins were discovered. On his return, he passed

¹ Lieut. Simpson has furnished ground plans of five of these structures, and Mr. Jackson has furnished eleven, Mr. Morgan, nine, and two restorations.

² The Reports of Secretary of War, with Reconnaissance of Routes from San Antonio to El Paso, by Brevet Lieut.-Col. J. E. Johnston, Lieut. W. F. Smith, Lieut. F. E. Bryan, Lieut. N. H. Michler, and Capt. S. G. French. Also, the Report of Captain R. B. Maroy's Route from Ft. Smith to Santa Fe, and the Report of Lieut. J. H. Simpson, of an Expedition into the Navajo country, etc., July 24th, 1850. Executive Document, No. 64, Thirty-First Congress.

³ For location of the Chaco ruins, see Map II, No. 6.

⁴ For location of the ruins on the Rio de Chelly, see Map No. 7.

south until he reached the Pueblo de Zuni on the Rio de Zuni, a branch of the Little Colorado. He moved eastward, visiting the ruins at Ojo Caspado and the Inscription Rock near Zuni Pass, and following the old trail, he reached the Pueblo de Laguna, situated on the San Jose, leaving Mt. Taylor on the north and Pueblo de Acoma on the south, and finally reached the Rio Grande in New Mexico.

The journal which he kept is very interesting, and his report is one of the most valuable ever published.¹

In speaking of the country, he says :

The country, viewed from the top of one of the highest mountains, presented to the eye of the beholder, in every direction, hills in their primitive grandeur as countless as the billows of the ocean. Far and wide these ten thousand single conical mounds rise, intersecting each other at their base or higher up their sides, forming an impassable barrier, had not convulsions of nature seemed partly to have opened the pass and cañon through which the route runs.¹

The Rio de Santa Fé is quite interesting, varying in depth from 100 to 150 feet, with the river trickling through it. But beyond the canon an extended plain stretches westward, about six miles to the Rio Grande. The Jemez mountains appear on the further side of the river, and the Sandia mountain lifts itself high and sublime to the left.

The most interesting ruins which Gen. Simpson discovered were situated in the Chaco Canon. He platted some five different pueblos, which he named, Pueblo Pintado, Wejegi, Una Vida, Hungo Pavie, Chethro Kette, Del Arroyo, and Penasca Blanca, and described them carefully. He also discovered several ruined pueblos in Canon de Chelley, one of them, a small pueblo, upon a shelf of the cliff about 50 feet above the canon; another seven miles from the mouth of the canon, which proved to be a pueblo in ruins of similar style of architecture to the pueblo on the Chaco.

The following is Genl. Simpson's description of the Canon and the ruined Pueblos in it:²

We reached the highest point of the land, dividing the tributaries of the Gulf of Mexico from the Pacific. This land is designated in most of the maps as Sierra Madre. From this point we commenced gradually descending, and finally came to a point where could be seen, in the distance, a conspicuous ruin called the Pueblo Pintado. After having marched twenty-one miles, we came to a spring of good water near one of the ruins in the vicinity of which we found good fuel and good grazing. After par-

¹ Mr. W. H. Jackson visited this region in 1887. He discovered several new pueblos, situated on the Old Arroya, not far from the Pueblo Bonito. One of these seems to have been originally terraced in the form of a pyramid like the great houses of Taos. Another called the Pueblo Alto, was situated high up on the bluff. It was reached by a series of stone steps and hand holes, which had been cut into the hard sand stones, which made an ascent up the almost vertical face of the bluff.

The ruins are situated so as to command a view of the entire horizon. Away to the north stretches the great basin of the Rio San Juan. The summit of the La Plata mountains glimmer in the distance. The Sierra Tunicha stretches across the entire western horizon, where, to the south of the elevated table lands, appear the snow covered summits of the San Mateo. In the east only the summits of the Jemez are in view, the frosted crown of the Relado shining above them all. The ruin is thus midway and above all others, dominating them as far as its position is concerned.

² The Pueblo Indians who inhabit New Mexico are estimated at 10,000 and speak six distinct dialects, no one showing anything more than the faintest cognate origin with the other. The vocabulary shows the character of the languages of the Navajos and Apaches.

A mile further down the cañon we came to another pueblo in ruins, called *Hungo Pavié*,¹ which is interpreted "Crooked Nose." These ruins show the same nicety in the details of their masonry as those I have already described. The ground plan shows an extent of exterior development of 1,872 feet, and a number of rooms upon the ground-floor equal to 72 feet. The structure shows the existence of but one circular estufa, and this is placed in the body of the north portion of the building, midway from either extremity. This estufa differs from the others we have seen, in having a number of interior counterforts. The main walls of the building are, at base, two and three-fourths feet through, and at this time show a height of about thirty feet. The ends of the floor beams, which are still visible, plainly showing that there was, originally, at least, a vertical series of four floors; there must then, also, have been originally, at least a series of four stories of rooms; and as the *debris* at the base of the walls is very great, it is reasonable to infer that there may have been even more.

The floor beams, which are round, in transverse section, and eleven inches in diameter, as well as the windows, which are as small as twelve by thirteen inches, have been arranged horizontally, with great precision and regularity. Pottery, as usual, was found scattered about the premises.

Continuing down the cañon one and three-quarter miles further, we came to another extensive structure in ruins, the name of which, according to the guide, is *Pueblo Chettro Kettle*, or, as he interpretes it, the "Rain



VIEW OF HUNGO PAVIE

Pueblo." These ruins have an extent of exterior circuit, inclusive of the court, of about 1,300 feet. The material of which the structure has been made, as also the style of the masonry, is the same as that of the ruined pueblos I have already described — the stone a sandstone, and the beams pine and cedar. The number of stories at present discoverable is four, there having been originally a series of windows (four and a half by three and a half feet) in the first story, which are now walled up. The number of rooms on the first floor, all of which were distinguishable, excepting those in the west wing, must have been as many as one hundred and twenty-four. The circular estufas, of which there are six in number, have a greater depth than any we have seen, and differ from them also in exhibiting more stories, one of them showing certainly two, and possibly three, the lowest one appearing to be almost covered up with *debris*.^{*} In the northwest corner of this ruin is found a room in almost a perfect state of preservation. (See Plate.)

Two or three hundred yards down the cañon we met another old pueblo in ruins, called Pueblo Bonito. This pueblo, though not so beautiful in the arrangement of the details of the masonry as *Pueblo Pintado*, is yet superior to its point of preservation. The circuit of its walls is about 1,300

feet. Its present elevation shows that it has had at least four stories of apartments. The number of rooms on the ground floor, at present discernable, is one hundred and thirty-nine. In this enumeration, however, are not included the apartments which are not distinguishable in the east portion of the pueblo, and which would probably swell the number to about two hundred. There, then, having been at least four stories of rooms, and supposing the horizontal depth of the edifice to have been uniform, from bottom to top, or in other words, not of a retreating terrace form on the court side, it is not unreasonable to infer that the original number of rooms was as many as eight hundred. - But, as the latter supposition is probably the most tenable, there must be a reduction from this number of one range of rooms for every story after the first, and this would lessen the number to six hundred and forty-one. The number of estufas is four, the largest being sixty feet in diameter, showing two stories in height, and having a present depth of twelve feet. All these estufas are, as in the case of the others I have seen, cylindrical in shape and nicely walled up with thin tabular stone. Among the ruins are several rooms in a very good state of preservation, one of them being walled up with alternate beds of large and small stones, the regularity of the combination producing a very pleasing effect. The ceiling of this room is also more tasteful than any we have seen the transverse beams being smaller and more numerous, and the longitudinal pieces which rest upon them only about an inch in diameter and beautifully regular. These latter have somewhat the appearance of barked willow.

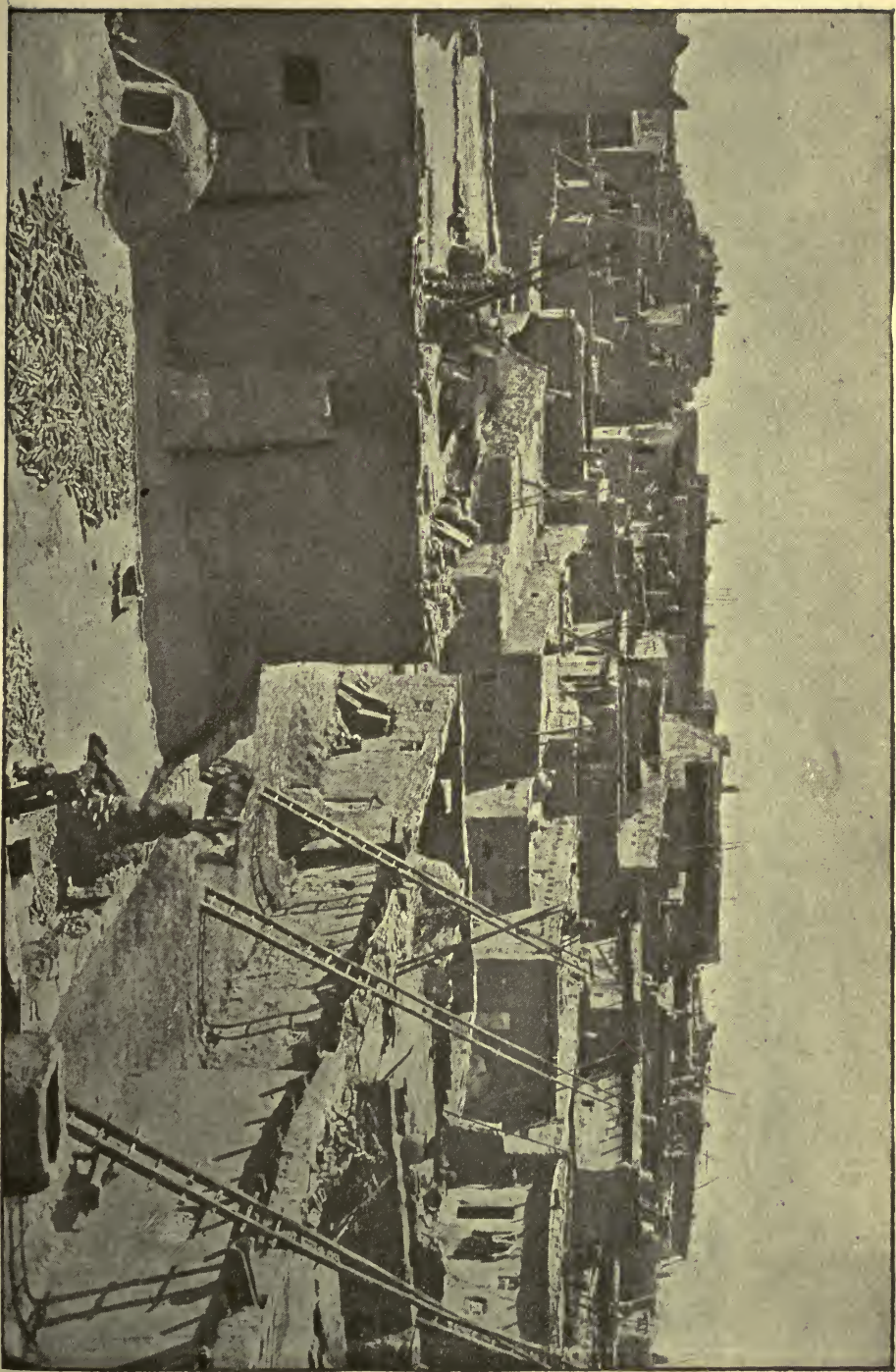
Two miles further down the cañon, but on its left or south bank, we came to another pueblo in ruins, called by the guide *Pueblo de Penasca Blanca*, the circuit of which I ascertained to be, approximately, one thousand and seven hundred feet. This is the largest pueblo, in plan, we have seen, and differs from others in the arrangement of the stones composing its walls. The walls of the other pueblos were all of one uniform character in the several beds composing it; but in this there is a regular alternation of large and small stones, the effect of which is both unique and beautiful. The largest stones, which are about one foot in length, and one-half foot in thickness, forms but a single bed, and then, alternating with these, are three or four beds of very small stones, each about an inch in thickness. The general plan of the structure also differs from the others in approximating the form of the circle. The number of rooms at present discoverable on the first floor is one hundred and twelve, and the existing walls show that there have been at least three stories of apartments. The number of circular estufas we counted was seven.

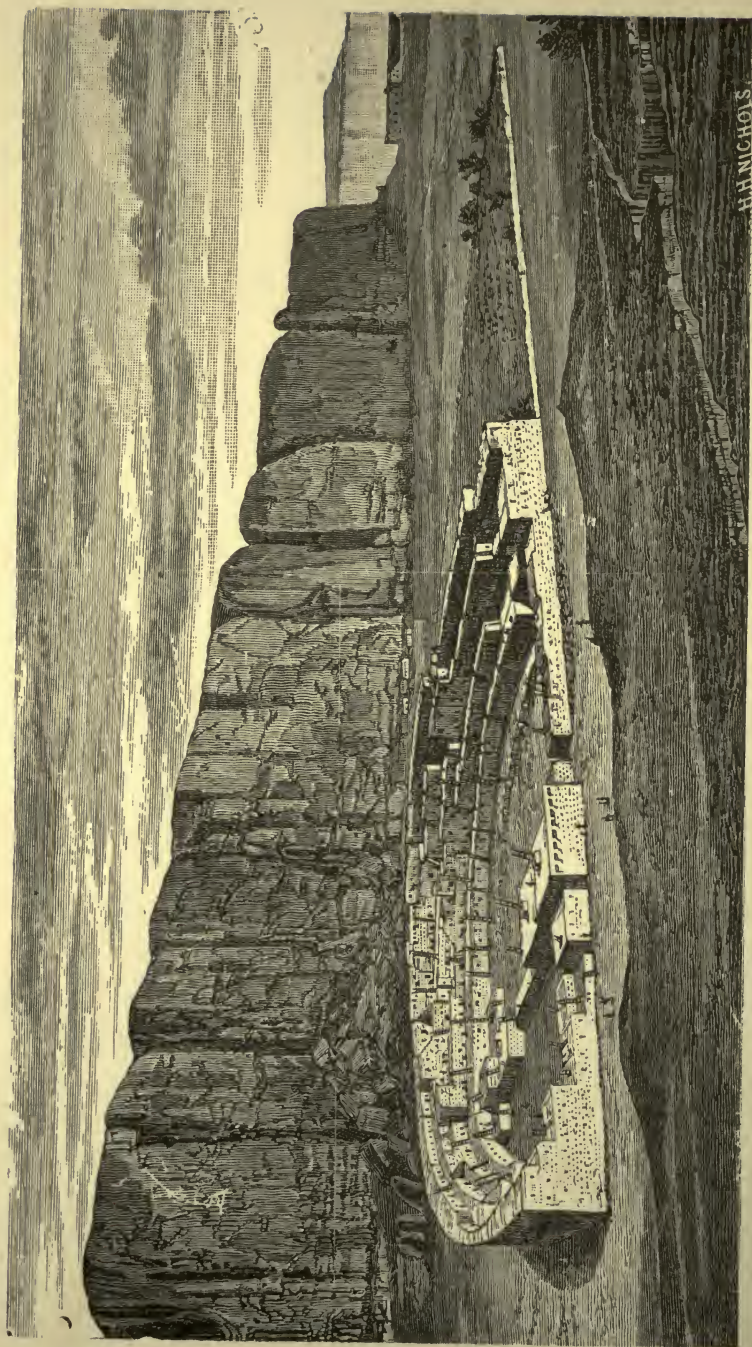
One thing, however, is certain: the ruins I have described as found upon the Rio Chaco are evidently, from the similarity of their style and mode of construction, of a common origin, and discover in the materials of which they are composed, as well as in the grandeur of their design and superiority of their workmanship, a condition of architectural excellence beyond the power of the Indians or New Mexicans of the present day to exhibit.

III. The next series of explorations were those which led into the central province; namely, that in which the Zuni and Moqui Pueblos are situated. The first to enter this region was Lieutenant Whipple and his party, who were sent out in 1853, to survey the Pacific Railroad.¹

Lieut. Whipple's account is very important, as it gives the location of the Pueblos and the distances between them, also their population. It also gives the relative location of the different Pueblos which are situated on the different rivers. By it we may determine the river system and the relation of the districts

¹ See Explorations of the Railroad Route from the Mississippi River to the Pacific. Vol. III, Part III, page 16.





VIEW OF PUEBLO BONITO RESTORED

to the river.¹ He first visited the pueblos of the Pecos, Isleta and other tribes, and gave the population of these villages as it was at that time. He also published a map of the Rio Grande and Colorado Rivers, with the Indian tribes located upon them. One of these maps was furnished to him by an Indian, and proved to be very correct.² The most interesting feature is, that the "starting point," or the "most ancient place referred to in Indian tradition," is placed at the head of the map, and called "Shipapu." His route led across the pueblo country, but farther south than that of General Simpson's. It also led through the region of the Zuni pueblos. His description of this pueblo is interesting and valuable.

The next to follow Lieut. Whipple was the expedition by Lieut. Joseph C. Ives, who was sent out in 1857 to ascertain the navigability of the Colorado River. His explorations led him into contact with tribes of Indians, such as Cocopas, Yumas, Chemhucvis, Pimas, Mojaves, Kualapais and Navajos; also into the region of the San Francisco Mountains and the Colorado Plateau, to the Moquis pueblos. His description of the Moqui Pueblos is among the first ever given. He says:

We learned that there were seven towns; that the name of that which we were visiting was Mooshahneh. A second smaller town was half a mile distant; two miles westward was a third, which had been seen from camp the evening before. Five or six miles to the north-east a bluff was pointed out as the location of three others; and we were informed that the last of the seven, Oraibi, was still further distant on the trail towards the great river.

From these heights, the ascent to which is so difficult and so easily defended, the Moquis can overlook the surrounding country and descry, at a vast distance, the approach of strangers. The towns themselves would be almost impregnable to an Indian assault. Each pueblo is built around a rectangular court, in which we suppose are the springs that furnish the supply to the reservoirs. The exterior walls, which are of stone, have no openings, and would have to be scaled or battered down before access could be gained to the interior.

The successive stories are set back, one behind the other. The lower rooms are reached through trap-doors from the first landing. The houses are three rooms deep, and open upon the interior court. The arrangement is as strong and compact as could well be devised, but as the court is common and the landings are separated by no partitions, it involves a certain community of residence. The strength of the position, unfortunately, does not protect the animals upon the plains below, and our friends informed us, with rueful faces, that the Comanches and Navajos had driven off a great deal of their stock during the previous year. The Moquis do not look warlike, and but for their natural and artificial defences would, doubtless, long ago have been exterminated by their powerful and aggressive neighbors.

The chief, accompanied by several friends, led the way with an incon-

¹ Distances given by Lieut. Whipple: Isleta, 12 miles south of Albuquerque.

From Laguna to the Sandia Mountains, about 30 miles.

From the Rio Grande to the Colorado Chiquito, or Flax River, is 237 miles.

From the Colorado Chiquito to the north of Rio Colorado, 307 miles.

The San Francisco Peaks, 12,000 feet above the sea, 5,000 feet above the base.

Lieut. Whipple gave the population of the 21 towns, or pueblos, inhabited by Figuex as 15,300; of the Navajos, 10,000; of the Moquis, 6,720.

The pueblos averaged in population about 800, and range from 500—which is the population of San Juan, to 1,200,—the population of Acoma.

² See Map of Rio Grande.

venient alacrity, considering the steepness of the ascent. The stone steps being surmounted, we came upon a level summit, and had the walls of the pueblos on one side and an extensive and beautiful view upon the other. Without giving us time to admire the scene, the Indians led us to a ladder planted against the centre of the front face of the pueblo. The town is nearly square, and surrounded by a stone wall fifteen feet high, the top of which forms a landing extending around the whole. Flights of stone steps led from the first to a second landing, upon which the doors of the houses open. Mounting the stairway opposite to the ladder, the chief crossed to the nearest door, and ushered us into a low apartment, from which two or three others opened towards the interior of the dwelling. Our host courteously asked us to be seated upon some skins spread along the floor against the wall, and presently his wife brought in a vase of water and a tray filled with a singular substance that looked more like sheets of thin blue wrapping paper rolled up into bundles than anything else that I had ever seen. I learned afterwards that it was made from corn-meal, ground very fine, made into a gruel, and poured over a heated stone to be baked. When dry, it has a surface slightly polished, like paper. The sheets are folded and rolled together, and form the staple article of food with the Moqui Indians.¹

Then we went out upon the landing, and by another flight of steps ascended to the roof, where we beheld a magnificent panorama. The San Francisco mountain, the valley and cañon of Flax (Colorado) River, and the plateaus to the north and east were all visible, the most distant objects appearing distinct and well defined through the transparent atmosphere. Several trails radiated from the foot of the bluff in perfectly straight lines, and could be traced a long way over the level surface. One conducted to the cañon of Flax River, and doubtless to the Yampais village; another, the chief told us, was the trail of the Apaches; another that of the Coyoteros; a fourth came from Zuni, and still further east was the Navajo trail leading to Fort Defiance.

The next one to follow Lieut. Whipple and Lieut. Ives was Capt. J. Macomb, who was accompanied by Dr. J. S. Newberry, the celebrated geologist. His report was mainly upon the geological features of the country, but also included an account of some of the pueblos. The following is his description of the Pueblo itself:

From the Cañon Largo² in New Mexico to the junction of the San Juan with the Colorado, the valley was studded with ruins. They are either in open valleys or on the cliffs and buttes, and it is evident that every inch of the valley was once cultivated. It is also probable that the inhabitants lived in fear of attack from outside enemies, for some of the buttes were crowned with defences. These defensive works have, with time, almost entirely disappeared.

Dr. Newberry mentions ruins near the Dolores River at Suro-uara, a town which once must have contained a population of several thousands. The report says: "There is every evidence that a large population resided here for many years,—perhaps centuries—and that they deserted it several years ago."

He describes a ruined town on the Rio Chama,³ in New Mexico, called Los Canones, situated on an isolated rock, four hundred and fifty feet high, having abrupt and almost perpendicular sides, with an area on the top of about twenty acres:

The town was entirely built of blocks of trachyte, which were quarried at the bottom of the rock. Each stone was dressed on all sides, and must have been transported to the summit on the shoulders of the workmen.

¹ See Report upon the "Colorado River of the West," by J. C. Ives; pp. 121-122.

² The canon Largo is situated northeast of Chaco canon and east of the Mancos Canon.

³ For location of Chama, see No. 26 on Map. This town on the Rio Chama was situated in the Rio Grande district and should be added to those already described. Its characteristics are the same as those of Pecos, Taos, and several others.

This ends the history of the "Early American Explorations." It will be noticed, however, that there were several series which followed these and that nearly all of them passed over the very regions which were reached and described by the early explorers, and brought to light some very important facts concerning them. We shall, therefore, only refer to these and then close this review.

The first of these to be mentioned is that series which began in connection with the Hayden survey, under the leadership of Mr. W. H. Jackson.

Mr. Jackson visited the region on the Chaco Canon, and described again the ruined pueblos which had been discovered by Gen. Simpson, also some new ruins which had not been noticed before; among these were the Pueblo Alto, the Stone Staircases, near the Chetro Kettle, and the Water Pockets.¹

His reports are exceedingly interesting and his descriptions remarkably clear and correct. This was in 1874. The following year he was accompanied by Mr. W. H. Holmes, who also made a report concerning the Cliff-dwellings of the Mancos, but added descriptions of pueblos, or villages, found in this valley, the most interesting of which were the ruins on the La Plata — those at the Aztec Springs and those on the MacElmo.

Two other parties were connected with the Hayden Survey. These parties visited the various remote parts of the pueblo district, and made a report in reference to the ruins found in them. One of these reports were made by Dr. J. W. Hoffman, who discovered two remarkable fortresses located on the Colorado Chiquito, to the southwest of the Cliff-dwellers' home. One of these he describes as a large and imposing Cliff-dwelling, about 30 to 35 feet in height, each story receding several feet, having a square tower in the front, through which he gained access to the terraces above. This is the only Cliff dwelling which has, so far, been discovered so far south, but is important because of the resemblance to the Cliff-dwellings on the San Juan. He also discovered a Cliff-dwelling, which he called Montezuma Wells. It was situated in a deep sink-hole, or recess, in the great plateau, to which access was gained by only one place. The buildings which were hidden away in the sides of this recess resembled the Cliff-dwellings on the San Juan, but differed, in that they were below the general level of the country rather than above.²

Prof. Cope also made a report in reference to the remains of populations on the Gallinas River, to the south-east of the Cliff-dwellings region. He says:³

¹ For location of these ruins, see Map Nos. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, Division III.

² Mr. Hoffman's description of these ruins will be given in another place.

³ The region described by Prof. Cope properly belongs to what we call the southern district; the district in which so many cavate dwellings and small houses are situated, though it is east of the Rio Grande. His description is given here because of its connection with the Hayden Survey.

There are no human residents in the region, and it is only traversed by bands of Apache, Navajo and Ute tribes of Indians. The indications of this ancient population consists of ruined buildings, pottery, flint implements and human bones. Broken vessels of baked clay are frequently found, and the fragments occur in all kinds of situations throughout the country. They are usually most easily discovered on the slopes of the hills and hog-backs of Cretaceous Tertiary Age, and where abounding, generally lead to a ruined building standing on the elevation above.

My attention was first called to the archæology of the region by observing that the conic hills just mentioned appeared to be, in many instances, crowned with stone structures, which, on examination, proved to be ruined buildings. These are round or square, with rounded angles, and from 15 to 25 feet in diameter. The walls are two and three feet in diameter, and composed of stones of moderate size, which have been roughly dressed or built without dressing, into solid, but not very closely-fitting, masonry. The walls remaining measure from 10 feet high downward. The floor inside is basin-shaped, or like a shallow bird nest, and frequently supports a growth of sage-brush of the same size and character as that growing on the plains below, and other shrubs. A building more or less exactly agreeing with this description was found on the summit of every hill of a conical form in the vicinity. Their form is probably due to the shape of the hill, as they were differently built on the level hog-backs. None of the circular buildings were found to be divided, nor were any traces of such buildings observed on lower ground.

The position of these buildings is susceptible of the same explanation as that of the still inhabited Moqui villages of Arizona, so interestingly described by Lieut. Ives in his report on his survey of the Rio Colorado of the West, and on the route from its cañon to Santa Fé. They were doubtless perched on these high eminences for purposes of defense, and they were conveniently located near a perennial stream, which permitted them to carry on a system of agriculture no doubt similar to that now practiced by the Moquis. The inhabitants of Cristone felt, however, one disadvantage not known to the Moquis,—they were, so far as present indications go, without water on their elevated rocks, but were dependent for their supply on the Gallinas Creek. I found no indication of cisterns which should furnish such supply in time of siege, although they doubtless could depend for a considerable length of time on rain water, which they caught and preserved in the many vessels of pottery, whose fragments are now so numerous about the ruins.*

It is evident that the region of the Gallinas was once as thickly inhabited as are now the more densely populated portions of the Eastern States. The number of buildings in a square mile of that region is equal to, if not greater than, the number now existing in the more densely populated rural districts of Pennsylvania and New Jersey.

The most important series of explorations took place after the organization of the Ethnological Bureau, 1878-9. The history of it is as follows:

In 1869 Major J. W. Powell made a celebrated expedition on the Colorado River, and was subsequently placed at the head of the Geographical and Geological Survey. In 1879 the Ethnological Bureau was established, and the first report was published in 1880. The same year Mr. James Stevenson was placed at the head of an expedition to make collections among the Zuni ruins. Along with him, Mr. Frank H. Cushing and Mr. J. K. Hillers, who was photographer of the Bureau, with a number of assistants. Mr. Stevenson returned with his party to Washington, but

* See *Ancient Ruins in New Mexico and Colorado*, pp. 166, 167 and 171.

Mr. Cushing remained at Zuni to study the language and customs of the Zunis. As a result, a large amount of pottery and stone implements from the pueblos was added to the collection at Washington, a catalogue of which was published in the Report for 1880 and '81.

A description of the Zuni fetiches and an interesting account of the Zuni philosophy and mythology, called the Zuni Illiad, was prepared by Mr. Frank H. Cushing and published in the same Report. Other expeditions were fitted out by the Bureau which made their report later on. The pottery of the ancient Pueblos was described by Mr. W. H. Holmes in the Report for 1882 and '83; a Study of the Textile Art in the Report for 1884 and '85. A very valuable account of the Pueblo architecture in Tusayan and Cibola by Victor Mindeleff, and an account of the mythical sand paintings of the Navajo Indians by Mr. Jas. Stevenson, in 1886 and '87. An account of the Medicine Men of the Apaches in 1887 and '88. An interesting account of the mythology of the tribe called the Sias, by Matilda C. Stevenson, in 1889 and '90. Of the ruins and canons of the great Colorado, discovered by Major Powell, some were small houses of the Cliff-house type, which were either isolated or in groups together. Small house ruins were also discovered by the party sent out by Major Powell. These are side by side with communal Pueblos, though the object of them is unknown.

IROQUOIAN PHILOLOGY.

To the Editor of the AMERICAN ANTIQUARIAN :

I have to thank my esteemed friend and co-worker, the Rev. Dr. Beauchamp, for obligingly drawing attention, in your last number, to the need of some further explanation of the Iroquois motto on the "Schuylkill Gun." I should have given this explanation in my article on the subject in your January number, but for my unwillingness to overload my contribution with minute philological details, in which very few readers are likely to take interest. I may say at once, that there is no more doubt as to the true meaning of the motto than there is as to the meaning of "*E pluribus unum*." Probably, if I had stated in my article that the translation which I gave of it had been submitted to the Rev. Isaac Bearfoot, the well known Mohawk clergyman and scholar (who is undoubtedly the highest authority in regard to his native language), and had been fully approved by him, Dr. Beauchamp would not have thought it worth while to trouble you or myself with any further conjectures.

The motto is *Kawanio che keeteru*, or, as it would be written in the modern missionary orthography "*Kewennio tsi kiteron*," which I, with Mr. Bearfoot's approval, have rendered, "I am master wherever I am." Now it is quite true that there are two totally distinct Iroquois words from which *kewennio* might be derived. The one is *kawennio* (written by Bruyas, in his ancient dictionary, *gawendio*) meaning "a fine voice," or, "to speak finely;" and the other is also *kawennio* (likewise written by Bruyas *gawendio*) meaning "to be master." The former is derived from the root *kawenna* (or *gawenna*) "voice," "word," or "speech," and the latter from the root *karwen* (or *gawen*) "to belong to." From this latter verb is derived the modern Iroquois word for God, *Rawennio*, "He is the Great Master," or, "He is the Great One to whom we belong." The final *nio* (or *yo*) retains in this word its ancient meaning of "great," whereas in later times the signification is changed to "fine," or "beautiful." To speak of the "beautiful voice" of a 32-pounder would hardly have occurred to an Indian; and, if it had, the force of the subsequent part of the motto would be lost. *Tsi* (otherwise written *ji*, or in the motto *che*) is a very common particle in Iroquois, meaning "that," "that which," "whatever," "wherever," and the like, according to the context.

The concluding word is derived from the verb *kenteron*, meaning "to be in some place." It is a verb of the fourth Iroquois conjugation, in the first person singular, and means merely "I am," or, "I abide," when used in reference to a place. The simple substantive verb (meaning "to be," without reference to place or other circumstances) is unknown to the Iroquois dialect. Dr. Beauchamp's native informants have overlooked this verb, *kenteron*, and have sought to find in the word *keeteru* something that would mean "ground" or earth," evidently thinking of *kahenta*, meadow, or *kaheta*, field. But it is impossible to suppose that either Conrad Weiser or Pylæus could make such a botch in spelling either of these common words.

I may add that the sound of *d* (after *n*) which Bruyas introduces into these words (making each of them *gawendio*) is a "strengthened" pronounciation of *n*, which was formerly much used by Iroquois speakers, but is now less common, and does not appear at all in Father Cuoq's Iroquois Lexicon. It may be compared to the superfluous *d* which uneducated speakers use in the preterit of *drown*, making it *drowned*. In the older Iroquois and Huron speech its use was not deemed a defect, but rather a grace of language. I hardly need add that the letters *k* and *g* (hard) are used indifferently in the Iroquois dialects, the sound being an "intermediate" one.

I would strongly recommend my friend, Dr. Beauchamp, either to devote himself to the study of the Iroquois language with the same earnestness which has enabled him to master the Latin, Greek and Hebrew tongues, or else, in his inquiries into the meaning of words and phrases of the language, to apply directly to the best authorities, who are scholars trained in linguistic researches, like the Rev. J. A. Cuoq, the Rev. Mr. Bearfoot, and Mr. J. N. B. Hewitt. His present informants, with the best intentions, will constantly mislead him, and thus cause him, unwillingly, to mislead others. There is no royal road to Indian, any more than to classic, philology.

HORATIO HALE.

EGYPTOLOGICAL NOTES.

RECORDS OF THE ISRAELITES IN EGYPT.

According to the Bible account in Genesis and Exodus, the descendants of Jacob passed several centuries in bondage in Egypt. Ever since the hieroglyphics on the monuments began to be deciphered hopes have been cherished that some traces would be found of the connection of the history of Egypt and Israel at that time; but up to the present year of grace no direct mention of the Israelites has been found. The Egyptian kings that figured most largely in biblical history—Necho, Tirhakah, So, and Shishak—have been identified; but little of their doings in Palestine has been found recorded; in short, little beyond lists of some of the Palestinian towns conquered by Shishak and Tirhakah, which enlarges our knowledge of the geography, but not of the history.

Captain W. M. Flinders Petrie gives an interesting account in *The Contemporary Review* (May) of the first discovery of a contemporaneous record on the monuments of the existence of Israel in the age of the Egyptian king Merenptah, supposed to be identical with the Pharaoh of the Exodus. The failure to find such traces heretofore is explained by Captain Petrie when he says that unfortunately only the sites of temples and fortresses occupied by the dominant Egyptians can be readily submitted to examination, and, as he shows further on, the Egyptian monuments belonging to the Hebrew period were largely destroyed by the later kings.

It was last December that Mr. Petrie undertook—with the permission of M. de Morgan, the Director of the Department of Antiquities, and the cordial cooperation of the Franco-Egyptian Administration of Antiquities—to excavate an important district at Thebes, containing most of the royal funerary temples. The more immediate results are thus given in summary form:

"Three months of excavation in this ground brought to light the sites of four royal temples hitherto quite unknown—those of Amenhotep II, Tahutmes IV, Tausert, and Saptah, dating from about 1450 to 1150 B. C.; another temple was identified as belonging to Merenptah, and two others already known—of Uazmes and Rameses the Great—were fully explored and fresh results obtained. With six of these temples we are not here concerned; but that of Merenptah contained the historical prize of the year."

The story is then told of King Merenptah, who was the vandal of his age, and who, finding that his expulsion of foreign enemies left a scarcity of men for public works, proceeded to build his own funeral temple by tearing down that of Amenhotep III, and using the material. The account proceeds as follows:

"Amid all this destruction—as bad as anything ever done by Turk or Pope—there was one block which almost defied injury. For a great account of his religious benefactions, Amenhotep III had selected a splendid slab of black syenite, penetrated with quartz veins. It stood 10 feet 3 inches high and 5 feet 4 inches wide, while its thickness of 13 inches of such a tough material prevented its suffering from a mere fall. It is the largest stele of igneous rock known, and was polished like glass on its exquisitely flat faces. The religious change of Amenhotep IV led to his erasing the figures of the god Amon, and nearly all the inscription. But Sety I piously re-engraved both the scene and inscription, and added that 'the restoration of the monuments was made by *Maat-men-ra* (Sety) for his father Amen.'

This noble block Merenptah stole and re-used; the face of it was set into a wall, and the back of it thus shown was engraved with a scene and a long historical inscription of Merenptah. It was afterward overthrown on the destruction of his temple, and lay flat on the ground without any damage but one small chip. The amount of inscription on it is almost without precedent. One side alone contains nearly twice as much as the enormous stele of sandstone still lying in the temple of Amenhotep, and both sides together contain about 6,000 signs. The condition of it is perfect; not a single sign is defaced or injured; the scenes are complete, the faces of the figures as fresh as when cut, and the painting on the scene of Merenptah is as bright as if laid on yesterday."

The writer gives a translation of the inscription, following the rendering of Mr. Griffith, and for convenience dividing it into paragraphs with appropriate headings.

The matter of chief interest is found in the closing portion, "Triumph of Merenptah":

"For the sun of Egypt has wrought this change; he was born as the fated means of revenging it, the king Merenptah. Chiefs bend down, saying 'Peace to thee'; not one of the nine bows raises his head. Vanquished are the Tahennu (N. Africans); the Khita (the Hittites) are quieted; ravaged is Pa-Kanana (Kanun) with all violence; taken is Askadni (Askelon?); seized is Kaznel; Yenu (Yanoh) of the Syrians is made as though it had not existed; THE PEOPLE OF YISRAAL IS SPOILED, IT HATH NO SEED; Syria has become as widows of the land of Egypt; all lands together are in peace. Every one that was a marauder hath been subdued by the king Merenptah, who gives life like the sun every day."

The entire inscription makes 1,400 words in the translation. Of course, the most important point of all—and the point that may never be absolutely settled—is the interpretation and historical setting of the short sentence in the translation, printed in small capitals: THE PEOPLE OF YISRAAL IS SPOILED, IT HATH NO SEED. Captain Petrie concludes his article by suggesting five different views that may be taken of the passage. His discussion of these five views is too extended, if not too purely speculative, to be quoted here. We part with his most interesting article by citing the closing paragraphs which suggest the two essentially different points of view from which the discussion may be carried on, and the need of more light before any certain conclusion can be arrived at:

"Which view is taken of this new light on Old Testament history must largely depend on the manner in which the earlier books are estimated. I have here endeavored to make the statements such as to be as little affected as possible by diverse opinions already existing. Far more positive information is needed before we can place the question of early Jewish history in a clear connection with the rest of the world. But we have now got one firm point in the midst of the great uncertainties which have hitherto beset the subject.

"Two practical lessons, however, may be clear to the public; first, that if we are ever to understand history, in the Bible or out of it, the pick is our instrument and the ruin-mounds are our material; second, that it is by the exhaustive clearance of small sites which can readily be examined that we shall soonest reach our results, and leave the less to be destroyed by the ceaseless plundering that is always going on."—*Literary Digest*.



MOUND BUILDERS' VILLAGE, OR "SHELL CITY OF THE SEA"

a. Wood-girted Island; one of the Keys of Florida. b. Graded Way Avenue and Platform for the Great House of the Chief. c. Ceremonial Way to the Temples. d. Pyramid Mounds and Terrace. e. Foundation of Terrace and Platform of Temple. f. Shell-bank Canals. g. Great Sea Wall. hhh. Filled up Lake or Water Courts of the Pile Dwellings.

EDITORIAL.

THE MAGNIFICENCE OF PREHISTORIC AMERICA.

Four hundred years ago America was a magnificent country. It was at the time of the discovery a land of wonders. The Spaniards were the chief discoverers and the earliest explorers never ceased to admire the strange things, and their descriptions are full of expressions which show the excitement which they were under.

They speak of the strange cities full of great temples and magnificent palaces, and of a barbaric magnificence which was fully equal to anything that could be seen in Europe. They told also, of other cities hidden away in the deep interior which were unlike anything that existed in the world. They wrote also, of tribes and nations who dwelt farther east along the shores of the Gulf of Mexico, from Florida to the Mississippi river, who dwelt in large villages and had strange customs; they were not so magnificent as those of the central provinces, yet they were sufficiently numerous to excite attention and interest all people. No disappointment was expressed by the historians though the same writers who described these regions had recently come from Peru, and one of them was called the "Inca." We, none of us, at the present time, can realize the impression which was formed on these Spaniards as they passed from one part of this continent to another. It was only after the French and the English began exploring the northern regions and came in contact with the wild tribes of Indians which were dwelling in New England and were scattered along the chain of Great Lakes, that any change occurred.

The excitement then passed away, and, after the conquests, the wonder gradually died out and America took its place among the other lands of the globe as it had been long inhabited.

After that time the impression began to gain foot-hold. That the Spaniards magnified everything they saw and had exaggerated the condition of things. The romance wore away and the struggle for conquest combined with the hardship of exploring filled the picture with shadows and reduced America to a region of dense forests and wide prairies and great lakes, and long rivers, where were wild animals and still wilder Indians. The term indian began to signify a very different thing from what it had before.

Since then, however, there has been a strange reaction which has been growing worse and worse, until, of late, the feeling has been that there was nothing in America which was especially worthy of note. The magnificence which had been pictured was only a dream.

The prehistoric condition of America which had been so graphically described by the Spaniards was, after all, very tame; especially when compared with the historic conditions of the East. The nations themselves were inferior and should only be compared to the unconverted races of the globe. Columbus had given to them the strange name of "Indians" because he was seeking India, and he imagined that they were East Indians; but the name has been constantly misleading us. In fact, a new school has been established whose chief object was to show that the term "Indian" furnishes a clew to all that was native. The Indians are the representatives of the prehistoric race or races. The result is, that a cloud has settled down upon the past history which has obscured all the magnificence which prevailed and reduced the record to a mere matter of fact, ascribing the graphic descriptions to mere glamour, and the desire to produce sensation. The native races have been run in the same mould; are supposed to have had the same system which prevailed among the wild tribes, especially among the Iroquois.

Criticism has been fastened upon every one who sought to stem the current and who maintained that there was any magnificence in prehistoric America. The wings of imagination were both clipped. Rhetoric was eschewed. Terms that were the most literal and least expressive must be used. There were no cities in Central America, but pueblos; no kings, but chiefs, no palaces, but communistic houses; no temples, but estufas. Even the old terms which were expressive, such as mound-builders, pueblos, Aztecs, Toltecs, must all be discarded or attended with the term Indian, and made to describe the kind of Indian which was to be designated.

Fortunately, however, the work of exploring has gone on and the facts are now coming out which essentially confirm what was written over 300 years ago. The Spanish authors were not read except by those who use the most literal terms, but the revelations of the spade brings to us the significance of the Spanish words and the pictures are not, after all, so overdrawn as was imagined. The engravings of J. L. Stephens have been supplemented by the pencil of W. H. Holmes. The descriptions of Garcilasso De La Vega, who first spoke of the ancient people of Florida, are supplemented by the rhetorical sentences of Mr. F. H. Cushing, and our imagination is again fired. We believe, after all, that there were magnificent cities in Central America. The people who dwelt on the shores of the mountain lake in Mexico and worshiped their divinities on the lofty Teocalli were not like the ordinary Indians of the North; We believe that the people who dwelt in the sunny glades of the southern states and made their homes on the sunny islands off the coast of Florida, were not like the skraelings which the Norsemen discovered on the coasts of New England.

The tribes of the north were like the Mongolians; those of the south were like the Malays.

The same picture, which 3,000 years ago was presented along the Asiatic coast could, 300 years ago, be seen along the American coast; the Atlantic and the Pacific represented the same stages, though they were separated by thousands of years.

These late reports seem like the earliest, yet the strong expressions of surprise now counteract the tendency to minimize. If the discoverers have been startled by their own finds, it is well that they describe them in graphic terms, for the more we look at the relics which come from these finds the more surprised we are. There are gathered, at the Field Museum in Chicago, casts from Central America and Yucatan, which seem to strongly impress the mind as we study them. There are specimens of pottery and of weaving from the pueblos of the west which make the same impression. Even relics which came from the Hopewell mounds in Ohio, notwithstanding the fact they are called "Indian" show, a magnificence which can be described only by the term mound-builders all in one sentence. They may be said to contain the same features which were generally distributed through the three stages of culture, showing that here in America we had a grade of society which was unique and superior to anything that was known in prehistoric Europe:

In fact, we have to put prehistoric America two or three stages in advance of Europe, giving to the stone-age as it existed among the mound-builders all the qualities of the bronze age found in the lake dwellings there, ascribing to the cliff dwellings all the magnificence which belonged to the rude stone monuments, ascribing to the pyramids of Central America even more of the magnificence that is found in the pyramids of Egypt, thus making the prehistoric age in America overlap the historic age of the east. These remarks have been drawn out by the very remarkable discovery of a Mound Builders village, made by F. H. Cushing. We shall not dwell upon it here. The description was given to the *New York Journal*, which is an illustrated sensational paper. We only take the wood cut, which was used and reproduce it, and furnish it to our readers for inspection.

We shall delay the further account until we get something that is less sensational, and yet the facts are enough to warrant what we have said, for we believe in the magnificence of prehistoric America and this illustrates the superiority of the mound-builders of the south to the ordinary Indian as he is known at the present time.

It is a picture of a mound-builders' village which contains the elements of the Lake dwellings, the shell heaps, the pyramid mound-builders, all in one.

It will be in accord with the impression which is drawn from the reading of the early historians, and shows that they furnished a correct picture of the country as it was then.

ARCHÆOLOGICAL NOTES.

JOHN S. SARGENT.—The mural decorations in the Boston Public Library have attracted a great deal of attention and some criticism. The artist has undertaken to give a mythological picture of the progress, but has mingled so many figures and strange conceptions with his colors that it is very difficult to make out what his intent is. The artist has not been known as an adept in mythology, and his skill is exercised more as that of an artist in presenting an allegorical picture than mythology. The following is a sketch of his life :

Possibly, in his youthful days, when he made pencil-drawings from the heroic figures in the great canvases by Tintoretto, Titian and Paul Veronese in Venice and Florence, and drew them again from memory to show his comrades in Paris the grandeur of line in these compositions which had so deeply stirred him, he laid the foundations of this stability. This quality has been of much benefit to him. Confronted by one difficult artistic problem after another, he has presented in every case solutions which, though sometimes more complete and more brilliant than others, have been at least audacious.

His career has been a cosmopolitan one, and his youth was passed among surroundings very different from those that affect the intellectual bent of most American boys who become painters and sculptors. He was born in Florence, Italy, in 1856, whither his parents had gone to live some years before. His father was Dr. Fitz-Hugh Sargent, a Boston physician, and his mother, whose maiden name was Newbold, and who belonged to a well-known family of Philadelphia, possessed the accomplishment of painting very cleverly in water-colors. Educated partly in Italy and partly in Germany, young Sargent entered the Academy of Fine Arts at Florence at a comparatively early age, and before he was eighteen had spent several years in art study. He learned to paint in water-colors, as well as to draw with the pencil or charcoal, and one summer, when he was in the Tyrol with his mother, Frederick Leighton, not yet a peer and president of the Royal Academy, but a famous English artist notwithstanding, meeting them, commended the boy's work, and counseled him to continue.

A. Sc. A.—The *Australian Association for the Advancement of Science* was first established in Sydney eight years ago. Its meetings have hitherto been annual, and have been held in the capitals of the colonies—Sydney, Melbourne, Adelaide, Hobart, Christchurch and Brisbane. The number of members on the list of each meeting has been from 600 to 800. The Sections correspond very much with those of the British Association. The next meeting will be held in Sydney about eighteen months hence. If any of your learned readers are disposed to help us by their presence or by contributing papers, I can assure them of a hearty welcome.

I. G. F.

BOOK REVIEWS.

Journal de la Societe des Americanistes de Paris. Tome Premier : Paris, Hotel des Societes Savantes, 28 Rue Serpente. 1895-1896.

The organization of a new society of Americanists in Paris has resulted in the establishment of a new journal. The names of the officers are well known in America, and are in themselves a guarantee of success. The following are the names : Honorary President, the Duke de Loubat ; Honorary Vice-Presidents, M. G. Maspero, M. Jules Oppert ; President, Dr. E. T. Hamy ; Vice-Presidents, Le Prince Roland Bonaparte, General Meredith Reed, Marquis de Peralta ; Secretary, M. Henri Cordier ; Treasurer, Marquis de Bassano.

The first article in the *Journal* is entitled, "A Study of the American Collections on the Occasion of the Fourth Centennial of the Discovery of America," by Dr. E. T. Hamy. The second article is entitled, "The Question of Fusang," by M. Henri Cordier.

The *Journal* is a folio and has about forty-one pages, and is illustrated by several full-page phototypes, which represent the various basins and sculptured rocks from Honduras and elsewhere. The *Journal* also contains the Constitution of the Society.

We trust that the organization will result in the increased interest in American archæology. We hope that it may furnish information on the localities which have not yet been reached, but which are, undoubtedly, very rich in pre-historic remains.

The Hill Caves of Yucatan. By Henry C. Mercer, Philadelphia. 1896.

At Progreso, Yucatan, late in January, 1895, the writer, with face turned toward Chiapas, crossed trails with Mr. Mercer, who was on his way to the interior to examine the remarkable caves of the hill country. It was hardly six months later that the report on the hill caves was announced, and the archeological world welcomed the appearance of this attractive volume, illustrated with many carefully drawn sections of the caverns and photographic views of the unique scenery, people and relics.

A lengthy review of the work is hardly necessary in this place as the results achieved, though the result of much careful research, are, so far as the burning question of the antiquity of man in America is concerned, exceedingly simple. The trenching of the culture layers of the caves in many widely separated localities brought to light nothing to suggest occupancy by peoples other than those so well known to the archeologist and historian, and the lover of research experiences a feeling akin to disappointment that this strange land, so rich in remains of later times, should be a blank as to the early history of the race. Of course it may be said that Mr. Mercer's results are negative and that further investigation may bring to light traces of antecedent cultures, and this may well be with respect to the great Central American region, but with respect to northern Yucatan the result reached would appear to be well nigh final. The writer has

searched in vain on many sites on the shores and far inland for indications of a culture more primitive than that of the Mayas but has found nothing, and Mr. E. H. Thompson, who has conducted explorations in many parts of the country and has trenched the cavern deposits with much care, secured no traces of a pre-Maya occupation.

So homogeneous are the characters of the Maya remains themselves that the conclusion is reached that the period of occupancy of that people was brief. It is true, further, that the whole of the northern end of the peninsula has an appearance of newness as if but recently lifted above the sea, and in traveling through the country one is constantly impressed with the thought that the vast, often soilless plains, are but newly born. Our botanists tell us, also, that many phenomena of plant life indicate a decided lack of adjustment to existing conditions, and we are led to ask if it is possible that the Peninsula of Yucatan was yet unborn, or at least still unfitted for human habitation during the earlier stages of development of American peoples and culture.

Of the many interesting details of cave hunting and trenching nothing need be said save that the reader will find them all novel and entertaining as well as instructive. The work is issued in the form of a graphic sketch rather than as a formal and studied essay. It is to be expected of Mr. Mercer that he will not rest long before letting in much needed light on the caverns of still more southern regions.—W. H. H.

The Lunar Cult in Chaldea. When the god had a solar character the goddess had a lunar nature; if one presided over the day, the other presided over the night; if one personified the active elements—fire and air, the other represented the passive elements—water and earth. (Chaldean Magic, p. 130.)

There was the idea, during the earliest period of the religion of the Euphrates, of a cosmic and uranic god, who was at once heaven, earth and time, a deity termed by the Greeks an *Æon*.—(*Ibid*, p. 133.)

This was certainly one of the rudest conceptions of the supernatural and of the unknown power which governs the world, as it was also one of the most primitive, for it bordered on fetichism, and even adopted some of its principles, by confiding blindly in talismans and in their mysterious power. Spirits, everywhere dispersed, produced all the phenomena of nature, and directed and animated all created beings. They caused evil and good, guided the movements of the celestial bodies, brought back the seasons in their order, made the winds to blow and the rain to fall, and produced, by their influence, atmospheric phenomena, both beneficial and destructive; they also rendered the earth fertile, and caused plants to germinate and to bear fruit, presided over the birth and preserved the lives of living beings, and yet, at the same time, sent death and disease.

There were spirits of this kind everywhere—in the starry heavens, in the earth and in the intermediate regions of the atmosphere; each element was full of them—earth, air, fire and water,—and nothing could exist without them. There were particular ones for each element, each celestial body, each creature, and each object in nature. A very distinct and definite personality was ascribed to them, and we see no trace of the idea of a Supreme God, of a first principle, with which they were connected.





THE GRIFFON—BUILT BY LA SALLE

THE FIRST VESSEL LAUNCHED ON THE GREAT LAKES.

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No. 5.

THE BATTLE AND THE RUINS OF CINTLA.

BY DANIEL G. BRINTON, M. D.

The first battle on the American continent in which horses were used was that of Cintla in Tabasco, March, 1519, the European troops being under the leadership of Hernando Cortes.

This fact attaches something more than an ordinary historic interest to the engagement, at least enough to make it desirable to ascertain its precise locality and its proper name. Both of these are in doubt, as well as the ethnic stock to which the native tribe belonged which opposed the Spanish soldiery on the occasion. I propose to submit these questions to a re-examination, and also to describe from unpublished material the ruins which,—as I believe—, mark the spot of this first important encounter of the two races on American soil.

The engagement itself has been described by all the historians of Cortes' famous conquest of Mexico, as it was the first brilliant incident of that adventure. We have at least four accounts of it from participants. One prepared under the eye of Cortes himself, one by the anonymous historian of his expedition, a third by Cortes' companion-in-arms, the redoubtable Bernal Diaz del Castillo, and a fourth by Andres de Tapia.¹

The most satisfactory narrative, however, is given by the chaplain of Cortes, Francisco de Gomara, and I shall briefly rehearse his story, adding a few points from other contemporary writers.²

Cortes with his armada cast anchor at the mouth of the River Grijalva in March, 1519. The current being strong and the bar shallow, he with about eighty men proceeded in boats up the river for about two miles, when they descried on the bank a large Indian village. It was surrounded with a wooden palisade, having turrets and loopholes from which to hurl stones

¹ The authorities are:

Carta de la Justicia de la Rica Villa de la Vera Cruz, July 10, 1519. This is sometimes referred to as Cortes' first letter.

Bernal Diaz del Castillo, *Historia de la Conquista de la Nueva Espana*.

Andres de Tapia, *Relacion Sobre la Conquista de la Nueva Espana*.

Relacion Anonyma de la Conquista de la Nueva Espana.

² Francisco Lopez de Gomara, *Conquista de Mexico*. I follow the Madrid edition of 1852.

and darts. The houses within were built of tiles laid in mortar, or of sun-dried brick (adobes), and were roofed with straw or split trees. The chief temple had spacious rooms, and its dependences surrounded a court yard.

The interpreter Aguilar, a Spaniard who had lived with the Mayas in Yucatan, could readily speak the tongue of the village, which was therefore a Mayan dialect. The natives told him that the town was named Potonchan, which Aguilar translated "the place that smells or stinks," an etymology probably correct in a general way.

The natives were distrustful, and opposed the landing of the Europeans rather with words and gestures than with blows. Their warriors approached Cortes in large boats, called in their tongue *tahucup*, and refused him permission to land.

After some parleying, Cortes withdrew to an island in the river near by, and as night drew on, he sent to the ships for reinforcements, and despatched some of the troops to look for a ford from the island to the mainland; which they easily found.

The next morning he landed some of his men by the boats, and attacked the village on the water side, while another detachment crossed the ford and making a circuit assaulted it in the rear. The Indians were prepared, having sent their women and children away. They were in number about four hundred, and made at first a brisk resistance, but being surprised by the rear assault, soon fled in dismay. No Spaniard was killed, though many were wounded.

Cortes established himself in the village and landed most of his troops and ten out of his thirteen horses. When his men were rested and the injured had had their wounds dressed with fat taken from dead Indians¹ (!) he sent out three detachments on foot to reconnoitre.

After marching a distance which is not stated, but which could not have been many miles, they came to an extensive plain covered with maize fields, temples and houses. This was Cintla. There were many warriors gathered there, and after a sharp skirmish the Spaniards fell back.

Having thus learned the ground, Cortes prepared for a decisive battle, as also did the natives. The latter gathered at Cintla in five divisions of eight thousand men each, as the chroniclers aver.

Cortes had about five hundred men including some Cuban Indians. The main detachment proceeded on foot by the high road, the cavalry along a path in the woods, and another detachment by a third route. The country was swampy and cut with canals, offering serious obstacles to the horses. It was not until the infantry had been for some time closely engaged with the enemy on the plain of Cintla, and rather severely handled, that the cavalry reached the spot. Their appearance, together with the noise and fatal effect of the musketry, soon

¹ This delectable surgical item is added by Captain Bernal Diaz.

struck terror to the hearts of the natives — their ranks broke and they fled. Gomara estimates that there were about three hundred of them killed, which is likely enough ; while Bishop De las Casas puts the slain at thirty thousand !¹

Such was the battle of Cintla. It broke the spirits of the natives, and soon their chieftain, named Tabasco, from whom the river and the province were later called, came in, and offered his submission. Cortes took possession of the land in the name of the King of Spain, and erected a large cross in the chief temple of Potonchan. He remained there several days longer before proceeding on his voyage.

The Name Cintla.—Of the contemporary authorities, only two give the name of the place at or near which the battle was fought.

One of these is Bernal Diaz, who writes it twice, spelling it both times *Cintia*.² The other is Gomara, who gives *Cintla*, the form which I believe to be correct. Through following some less reliable authorities a number of writers, among them Prescott and his editor Mr. J. F. Kirk, Orozco y Berra, etc., and their copyists, have deformed this word into *Ceutla*.

The most obvious derivation of Cintla is from the Nahuatl language, in which *Cintla* means a dried ear of maize ; *Cintlan*, a place where dried ears are, a cornfield. Most of the places in Tabasco became known to the Spaniards under their Nahuatl appellatives through interpreters in that tongue, and because most of the territory had been subjected to the powerful sway of the Montezumas.

Still, Cintla may also be a Mayan word. It may be a nominal form from the verb *tzen-tah*, and would then have the signification, "a built-up place," or one well stocked with provisions ; or, it may be a patronymic from the Tzentals, the tribe which occupied this region at the time, as I shall proceed to show.

The Native Tribe.—There is no question but that the native tribe which took part in this combat belonged to the Mayan stock. All the accounts agree that Aguilar, the Spaniard whom Cortes found in Yucatan as a captive, and who had learned to speak the Mayan tongue, communicated with the natives without difficulty. This is conclusive as to their ethnic position.

Further evidence, if needed, is offered by the native names and words preserved in the accounts. The term for their large canoes, *tahucup*, is from the Maya *tahal*, to swim, and *kop*, that which is hollow, or hollowed out. The name *potonchan*, Aguilar translated as, "the place that stinks" (*lugar que hiede*). He evidently understood it as derived from the Maya verb *tunhal*, to stink, with the intensive prefix *pot* (which is not unusual in the tongue, as *pot-hokan*, very evident, etc.). The historian Herrera, on some authority not known to me, further explains

¹ *Historia de las Indias*. Lib. XIV.

² I have consulted both the original edition (1632) and the Madrid reprint of 1852. It is thus spelled in both, though Dr. Jourdanet, in his excellent French translation (Paris, 1877) gives *Cintla*.

this term as one of contempt applied to the people there, meaning rude and barbarous ;¹ as we should say, using the same metaphor, "stinkards."

Tabasco is said by Bernal Diaz to have been the name of the principal chief of the eight provinces or tribes, who together opposed the Spaniards. For this reason I would reject the derivation from the Nahuatl, proposed by Rovirosa,—*tlalli*, earth, *paltic*, wet or swampy, *co*, in,²—however appropriate it would be geographically ; and also that from the Maya, *tazcoob*, "deceived," referring to the deceptions practiced on the Spaniards,—which is defended by Orozco y Berra³ ; and I should accept that which I find suggested by Dr. Berendt in his manuscript work on Mayan geographical names. He reads *Tabasco* as a slightly corrupt form of the Maya *T'ah-uaxac-coh*, "our (or the) master of the eight lions," referring to the eight districts or gentes of the tribe. This is significant and appropriate, the jaguar, the American lion, being a very common emblem in the ruins of Cintla.

The branch of the Mayan stock which occupied the litoral of the province of Tabasco at that time were those later known as the Tzentals (otherwise spelled Zendal or Tzeltal). By some writers they have been called the Chontals of Tobasco, *chontal*, as is well known, being merely a common noun in Nahuatl to express foreigners or barbarians. Their identity with the modern Tzentals of Chiápas has been established by the researches of Dr. Berendt.

The Tzentl is a dialect closely akin to pure Maya, though it was believed by Dr. Berendt to present nearer relations than the Maya proper to the dialect of the Huastecas, a segregated idiom of the Mayan family, spoken near Tampico.

The Locality.—Until M. Désiré Charnay brought out the results of the Lorillard expedition in his handsome work, "The Ancient Cities of the New World,"⁴ no one, so far as I know, had expressed any doubt that Cintla was situated near the mouth of the great river, the Rio de Tabasco, formed by the confluence of the Usumacinta and the Rio de Grijalva, and emptying into the bay of Campeche, 18° 35', north latitude.

M. Charnay did not visit the ruins of Cintla nor the site of Potonchan, which I am about to describe ; but he did make an examination of the ruins of Comalcalco, about thirty miles west of Cintla ; and as they are of notable magnitude, he proceeds to argue that they represent the ancient Cintla, of the victory of Cortes.

The arguments on which he founds this contention may be briefly stated. They are that the accounts refer to two entrances to the river (*dos bocas*) while the Tabasco has but one ;

1 Herrera, *Historia de las Indias Occidentales*. Dec. III, lib. vii, cap. iii.

2 Jose N. Rovirosa, *Nombres Geográficos de Tabasco*, (Mexico, 1888).

3 Orozco y Berra, *Historia Antigua de Mexico*, Tom. XIV, Lib. I, cap. V.

4 I use the French edition, *Les Anciennes Villes du Nouveau Monde*, pp. 159, 160 (Paris, 1885).

that the bar of Tabasco now admits vessels of 300 tons, whereas Cortes speaks of it as too shallow for his caravels; that Herrera says Cortes retired to a small island, whereas there is none in the Rio de Tabasco; that Herrera further speaks of a ford by which the soldiers of Cortes "crossed the river," which would have been impossible in the Tabasco; and finally that the same writer mentions cacao plantations, though at present none exist near Frontera. For these reasons he thinks both Grijalva and Cortes entered the embouchure now known as the Barra de Dos Bocas, some twenty-five miles west of the mouth of the Rio de Tabasco.

A slight examination dissipates these objections. Both Grijalva and Cortes note the powerful current of the Rio de Tabasco, carrying fresh water six miles out to sea, as is observed to-day,¹ and this is not in the least applicable to the insignificant stream flowing out of the Dos Bocas. M. Charnay was misinformed when he stated there is no island at the mouth of the Rio de Tabasco. There are in fact two, one, long and narrow, known as the Isla de Grijalva, the other quite small, close to the plantation of Dolores (see the map). The latter was probably that to which Cortes retired. None of the accounts say that the soldiers "forded the river," but only the short distance between the island and the mainland. These islands give to the entrance of the river the appearance of two embouchures or mouths. The depth of the bar varies of course with the seasons and with the tides.

But what is conclusive is that in 1525 the Spaniards founded the city Nuestra Señora de la Victoria, on the site of Potonchan. In 1646, it had a cura and a vicar, and counted 2000 parishioners, and the abundance of its cacao harvest is especially noted.² At some later day it was attacked and destroyed by filibusters; but the remains of the church and the cemetery are still visible at Dolores, and pilgrimages are yet made to them on certain holy days by the faithful of the parish of Frontera, on the opposite shore. This record places the scene of the conflict beyond all doubt.

Condition of the Natives.—The various accounts agree in describing the province as highly cultivated and thickly settled. Maize and cacao were the principal crops. Temples and edifices are repeatedly referred to. A few years afterwards (1524) Cortes traversed Tabasco some miles inland, and has left a description of its industries. The people were active merchants, and the list of their commodities which he gives includes cacao, maize, cotton, dye-stuffs, feathers, salt, wax, resins, paints, gum copal, pottery, beads, shells, precious stones, woven stuffs and gold of low alloy. The richer citizens had numerous wives and female slaves, which accounted for the rapid increase in popu-

¹ Requena says the current from the river is visible "from ten to twelve leagues from the shore in every season and in high water much further." Pedro Requena, *Informe sobre Tabasco*, p. 52 (S. Juan Bantista, 1847, Imprenta del Gobierno).

² These facts are given in the *Memoria* of Díaz de la Calle, printed at Madrid, 1646, extracts from which I find in Dr. Berendt's manuscripts.

lation.¹ The chronicler Gomara furnished a long list of the native articles which Grijalva brought back in 1519 from Potonchan and the neighboring coast. They reveal a high degree of artistic culture, and leave no doubt but that the tribes of the vicinity were as developed in the arts as any in America.

Ruined Cities.—Writing about 1875, Mr. H. H. Bancroft says : "On the immediate coast (of Tabasco) some large towns and temples were seen by the early voyagers ; but I have no information that relics of any kind have been discovered in modern times."²

In fact, although it is doubtful if there are any ruins directly on the coast, there are many but a short distance inland. Those at Comalcacalco have been figured and described by M. Charnay, and his work is so well known that a reference to it is sufficient.

At the locality called Pedrito, about fifteen miles from the mouth of the Tabasco, there are many mounds, embankments, piles of pottery and other signs of an ancient town. Among the relics is a large circular stone, "like a round table," with figures in relief engraved on its sides, and with holes drilled in its surface, in which pegs or wooden nails are said to have been fitted.³ About ten miles north of this spot is another group of mounds on the left bank of the Rio de San Pablo y San Pedro. Doubtless many others exist unknown in the dense forests.

The Ruins of Cintla.—The ruins of Cintla were visited and surveyed by the late Dr. C. H. Berendt in March and April, 1869, and, so far as I know, neither before nor since have they been seen by any archæologist. Nor can I learn that Dr. Berendt ever published the results of his researches. The only reference I can find to them in any of his published writings is in a paper which he read, July 10th, 1876, before the American Geographical Society, and which was published in its Bulletin, No. 2, for that year. The title of this address was, "Remarks on the Centers of Ancient Civilization in Central America and their Geographical Distribution." He certainly prepared a much more extended paper especially on Cintla, with illustrations and maps, fragments of which I have found among the documents left at his death ; but if published, I have been unable to trace it. Nor can I discover what became of the considerable archæological collection which he made at Cintla and brought away with him, a memorandum about which is among his papers.

The passage in his address before the Geographical Society touching on Cintla is as follows :

"It was by mere chance that in the year 1869 I discovered the site of ancient Cintla, buried in the thick and fever-haunted forests of the marshy coast, and unknown until then to the Indians themselves. In the course of the excavations which I

¹ Cortes' description is given in his "fourth letter." His route is extremely difficult to locate accurately.

² *The Native Races of the Pacific States*, Vol. IV, p. 287.

³ MSS, Notes of Dr. C. H. Berendt.

caused to be made, antiquities of a curious and interesting character were laid bare.

"Prominent among these ruins, and presenting a peculiar feature of workmanship, are the so-called *teocallis*, or mounds, which here are built of earth, and covered at the top and on the sides with a thick layer of mortar in imitation of stone work. On one of these mounds I found not only the sides and the platform, but even two flights of stairs, constructed of the same apparently fragile but yet enduring material. One of the latter was perfectly well preserved. I likewise saw clay figures of animals covered with a similar coating of mortar or plaster, thus imitating sculptured stone and retaining traces of having been painted in various colors.

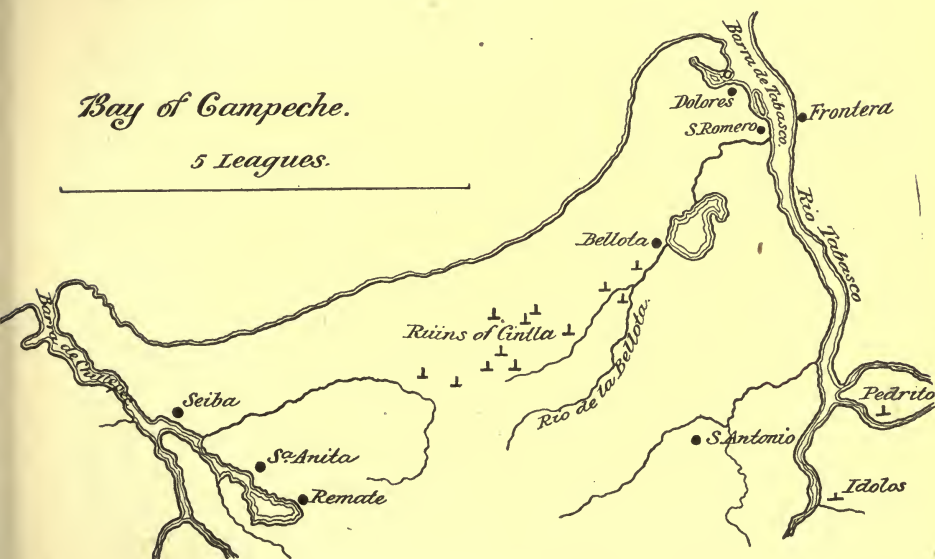


Fig. 1.—Map of the Ruins of Cintla.

"The reason for this singular use of cement probably is that in the alluvial soil of this coast, no stones occur within a distance of fifty miles and more from the sea shore; stone implements, such as axes, chisels, grinding stones, obsidian flakes, etc., which are occasionally found, can have been introduced solely by trade. The pottery and the idols made of terra cotta show a high degree of perfection.

"Regarding the period down to which such earthenware was made, a broken vase disinterred from one of the mounds in my presence may give a clue. Its two handles represent Spaniards, with their European features, beard, Catalan cap, and *polainas*, or gaiters."

There is also among his papers the commencement of an

address or essay upon these ruins, written in Spanish, and this, when completed, may have been printed in some Mexican periodical. I translate from it the following passage, the remainder having been lost :

"Having learned that in the forests of the coast between the *barras* of Chiltepec and Grijalva various mounds, idols and other remains of an earlier population had been discovered, I proceeded to that part of the country called *Del Cajete*, and devoted six weeks to its exploration. I soon found numerous mounds and embankments from which the present inhabitants had gathered fragments of idols and milling stones of a form unknown now in the vicinity.

"It very soon became apparent that these mounds were not such as those isolated ones which are found in various parts of this country, but were arranged in groups surrounding open spaces, *plazas*, and forming streets, extending over an area three leagues in length by one in breadth.

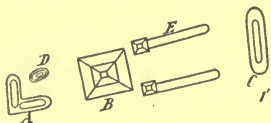


Fig. 2.—The Great Temple.

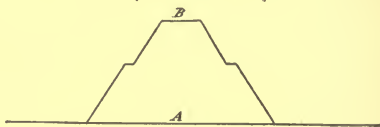


Fig. 3.—Cross Section of Fig. 2, B.

"Not a single tradition, not a single native name survives to cast any light upon these ruins. The whole of this coast was depopulated in the seventeenth and eighteenth centuries owing to the slave-hunting incursions of the filibusters and man-hunters. The Indians who are now found in the neighborhood have removed there from the interior since the beginning of the present century, and are absolutely ignorant of the origin or builders of this city, hidden in the tropical forest."

The locality referred to as *Del Cajete* was a settlement (*rancheria*) of Indians, now better known as San José de la Bellota, on a large pond into which drains the Rio de la Bellota. It was founded in 1815 by a cura who brought the Indians there from the other side of the river, back of Frontera.

The general position of the ruins will be seen from the above map. It is drawn to the scale of the Mexican league, which contains 5000 yards (*varas*) each 838 mm. One league is therefore approximately two and three quarters of our miles. No ruins or mounds were located immediately on or near the coast.

Almost a continuous line of mounds, embankments and heaps of *débris* extends from near Bellota for about nine miles in a general west-south-west direction over a plain which is now densely covered by a tropical forest.

Dr. Berendt did not attempt to survey but a few of these numerous monuments. The plan of one of the largest, called by the natives *El Cuyo Grande*, "The Great Temple," is shown in the following, figure 2,

The principal mound B is terraced about half way up and was 82 feet in height. A cross section of it is shown in Fig. 3, A-B.

A series of constructions is connected with this, the whole running in a direction east-north-east to west-south-west. They consist of a rectangular embankment six to eight feet high, Fig. 2, A; an isolated circular mound, D; and two small mounds at the eastern corners of the great mound, from which parallel embankments, E, extend easterly, inclosing an open space, which at the extremity is terminated by a long low mound, C. The total distance from A to C is 1140 feet.

The great mound and most of the others in the vicinity are faced with mortar made of sand and lime from burnt oyster shells. On one or both sides are flights of steps which lead up to the summit. These are constructed of layers of mortar, tiles and hard-pounded earth, distributed in the manner represented in Fig. 4.

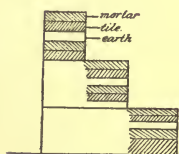


Fig. 4.—Construction of Stairways.

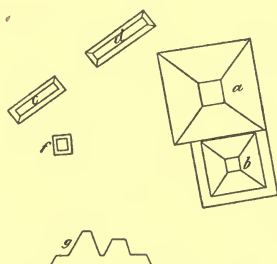


Fig. 5.—Los Cuyos de la Canada.

The earth is either black or red, and is mixed with sand from the coast to give it consistency. The tiles or bricks are rectangular in shape, well made and regular in outline, and laid one against another as in a pavement.

Another group is called *Los Cuyos de la Canada*, Fig. 5. It consists of two mounds on a low platform, adjoining each other. The larger, *a*, is twenty feet in height, the lower, *b*, about fifteen feet. Their sides are oriented exactly to the true north. A section is shown in Fig. 5, *g*. Two small oblong mounds, *c* and *d*, about six feet high, and a square altar-like heap, *f*, appear to be in relation to the group. Numerous pieces of mortar and terra cotta occur in the vicinity, and 1500 feet directly west there is a large mound of moderate height.

Almost anywhere in the area of this ancient city, the soil abounds in fragments of mortar, pottery and images of earthenware. Very frequently the latter are represented seated on a bell-shaped support, apparently that they might be stood up upon a flat surface. Two of these are shown from Dr. Berendt's drawings in Figs. 6 and 7. The handles of utensils were often decorated in fantastic forms as that shown in Fig. 8.



Fig. 6.—Image with Bell-shaped Bottom and Handle.



Fig. 7.—Image of a Warrior on Bell-shaped Support.



Fig. 8.—Decorated Handle of Utensil.

An abundance of *metates*, or corn-stones, of a shape not now usual in the neighborhood were exhibited. Some of these were quite graceful, having several feet and highly ornamented. The vases of pottery were occasionally noteworthy for their symmetry and beauty, as that shown in Fig. 9.



Fig. 9.—Jar of Pottery.

At the foot of the stairways to the summit of the mounds on each side were frequently the remains of tigers' heads, well moulded in burnt clay.

Here and there the remains of wells were discovered, or of excavations which apparently were intended for the purpose of obtaining water.

Dr. Berendt mentions several tombs, but unfortunately does not specify their location or construction. He states that they usually contained several bodies, in a sitting posture, placed side by side with their arms and ornaments.

No trace of metal whatever was discovered, neither copper nor gold, which is rather unexpected, as the natives in the time of Grijalva were acquainted with both these substances.

Such is the brief account I am able to give of these extensive and interesting ruins from the fragmentary papers of their explorer. If any reader of these notes can inform this journal of the disposition Dr. Berendt made of his collection and the full memoranda of his surveys and excavations, the cause of American archæology will be further benefited.

MEDIA, PENNA.

A STORY OF THE AMERRIQUE INDIANS OF NICARAGUA.

BY J. CRAWFORD.

Records exist in the "Palacio Episcopal," in the city of Leon, Nicaragua, dated about 1608, which date is however indistinct, of the renouncement of idolatry by a cacique of the Amerrique people in Nicaragua, and of his baptism into the Christian faith, and his marriage then and there with a young, educated Spanish woman.

Some of the descendants of that union now reside at Jerigalpa, the capital of the department of Chontalis, Nicaragua; and they declare from their family traditions that the conversion of the Indian chieftain to Christianity, and the marriage of those two different types of people was the result of true love.

Its history is this: About the year 1600 the young Spanish lady above referred to came with her parents from Europe to Jerigalpa, then at the eastern margin of Spanish occupation in Nicaragua, and finding herself without congenial society, and no convent then in that part of the country into which she could retire, determined to occupy her time at home as a missionary, and to teach letters and Christianity to Indian children. Among her scholars was an Indian maiden a few years her junior, who, her teacher often noticed, was treated with marked deference and respect by all Indians, old and young, in the town. The two young women soon became very friendly and devotedly attached to each other, and after a companionship of over two years, interrupted occasionally by a visit of the Indian girl to her home in the distant eastern mountain ridges, the missionary discovered that her Indian friend was a princess much beloved by her brother, the young cacique of the great Amerrique tribe, and by that people, who were at that date dominant in Eastern Nicaragua.

Once upon the return of the Amerrique girl to Jerigalpa, from a visit to her home, she informed her Spanish friend and teacher that she was instructed by the cacique and his chiefs to invite the missionary and her parents to come accompanied by some of their friends, and visit the Amerriques at their principal city, about forty-five miles distant, and there to teach them how to know and love the Great Spirit whom she knew and loved, and whose priestess they believed she was. They declared that she could return to Jerigalpa or elsewhere whenever she wished, also that she and her family would be cared for, provided with every necessary comfort, and respected in every way; also that properly equipped horses and an escort of Indians under the direction of the young princess, should be

their guide and companion to and from the city of the Amerriques. The young missionary desired to accept this invitation, and her family agreed to accompany her, greatly to the delight of the Indian princess, who promised to interest them daily with almost endless varieties of semi-tropical beauties of fauna and flora; but the other Spanish families in the town prohibited the visit, saying it would result in the loss of the family, or, in war to regain them. This opposition offended the princess who returned to her home and related the facts.

In a few days thereafter the Amerriques came in large numbers, armed and led by their cacique, entered the town of Jerigalpa, and drove many of the Spanish families from that part of the country, and, capturing the missionary and her family, placed them in charge of an escort under the direction of the princess, who with kind treatment, and with many evidences of esteem and respect, conducted them to the principal city of her tribe where they remained for several months.

The young missionary and the cacique became very fond of each other, and finally, earnest and true lovers, so that soon after the former had safely returned to Jerigalpa she consented to marry the Amerrique chieftain: but only on the condition that he would renounce idolatry, and go far west to the city of Léon and be baptized there by the Roman Catholic Bishop into the Christian faith and church.² After this ceremony the two were to be married by the Bishop and return to the city of the Amerriques where the woman was to be the priestess of her husband's people.

After the attack by the Indians above related on Jerigalpa, that town was deserted by nearly all the Spaniards, so the missionary and her family on their return from the Indian city also moved to the former city of Léon, where they resided for many months.

A few days previous to the day appointed for the baptism of the Cacique and of his marriage to the Spanish lady, the Negradian Indians living near Subtiava³ arrived in large numbers at a mountain near to the old city of Léon, and from there escorted to that city the young chieftain, his sister the princess, and about 5,000 of his people, all armed, and each one wearing ornaments of gold, and profusely decorated with their wonderful, brilliant, beautiful and varied colored plumage.

1 Many of the incidents related in this paper in reference to the Amerriques, their chieftain and the young Spanish missionary and her family, the attack by the Indians on Jerigalpa, etc., are on record in the archives of the department of Chontalis, or in the National Archives, or in those of the "Episcopal Palace" in Leon.

2 The old city of Leon was then the stronghold of the Spaniards in Nicaragua. It was buried beneath rocks and peperins ejected from the volcano Momotamba in 1610, and the survivors moved westward to Subtiava, the present city of Leon. It was situated at the foot of the large, tall volcano Momotomba at the western termination of Lake Xolotlan, Managua.

3 Subtiava is now a part of the present city of Leon, and about 25 miles west from the old buried city of Leon. The Negradian Indians living there now have lost their native language, and all speak Spanish.

Early on the appointed and notable day, preceded by the Bishop and other hierarchy of the church, the Cacique and hundreds of his people entered the cathedral, then more than half a century old, and, after burying numerous idols at the foot of the "*Sanctum Sanctorum*," were baptized into the Christian faith. The Bishop then united the chieftain and Spanish missionary.

Then mounted on decorated horses in front of thousands of the Amerriques, and preceded by many of the Negradian Indians, both were escorted with great demonstrations of joy through the old city of Léon to near the foot of the mountain volcano Momotombo, where after celebrating a feast and friendly farewell, the two tribes parted never to meet again even unto this date, 1894.

The Negradians returned to Subtiava and declined into subjugation and slavery to the Spaniards and their Latin-American successors.

The Amerriques returned to their home and freedom on the east side of the Amerrique range of mountains where every tree and plant robed in beauty and perpetual verdure is continually flowering and fruiting.

The few remnants at this date, 1896, of these Indians are free and roam over the same mountain ranges familiar through many centuries past to their ancestors alike undisturbed by other types of man.

Many incidents and legends have been preserved among the Indians and Spaniards referring to the Amerriques from the time of the discovery of Nicaragua in 1502 by Christopher Columbus, to the early known evidences of man's existence on the continent of America. Some of them are dim and mythical, others either transmitting or reflecting the impressions of truth. Among them are the following, which are specially referred to in this paper because of their connection, or probable connection, with the origin of the name America,⁴ which the writer believes has been established beyond question to have been derived originally through Christopher Columbus and his accompanying mariners, from the Amerrique people, with whom he was in daily communication for ten days in October, 1507. In 1891 there was removed from the Island of Momotombito in Lake Xocoltan or Xolotlan, Managua, to the city of Léon, Nicaragua, three stone statues of men, the remnant of six original similar statues which had been sculptured in a past geological epoch by artists of much intelligence and skill, with implements of flint and felsite. These statuettes are portraiture of a type of man differing from, and evidently

⁴ The origin of the name America from the Amerriques has been proven with great clearness by Prof. Jules Marcou Cambridge, Mass., U. S. A., in his many publications on the derivation of the name America. See especially his paper on this subject in Smithsonian Report, Part I, P. 647, entitled "Amerriques, Amerigo Vespucci, and America," and also "Origin of Name America," Goldthwaite's Geographical Magazine, New York City, Feb., 1893.

long antedating on this continent the oldest types of aborigines, known by their sculpturing, pottery and glyphs, to have existed in Mexico.⁵

During the time, now long distant, when those artists among the earliest people in Nicaragua were completing the above referred to six stone statues, which evidently portrayed the distinctive features of their own type, a subsidence occurred of all or part of the island of Momotombito, and also of all that part of western Nicaragua to a depth beneath the Pacific Ocean of about twenty-five feet,⁶ inundating the heated subterranean volcanic caverns in all that region, causing terrific explosions, and violent expulsions of volcanic bombs, fused aquaigeneous and other rock materials. In the face of such terrible cataclysms, the sculptors of the six stone images and their people would either have perished, or if saved, were forced to move eastward, their only route toward safety: across lakes Xolotlan and Nicarago, Nicaragua, to the verdure covered Amerrique range of mountains, visible from the small elevated plateaus on the cone shaped mountain island, Momotombito.⁷

The Amerriques of the present time resemble so closely the type of man portrayed on the statues referred to, that it appears reasonable to infer that they were made by ancient ancestors of the above people.

The dissimilarity of the Amerrique Indians to the descendants in Nicaragua of the Nahuatl invaders from Mexico who nearly surround them west and north, and also of the Chibchas — Chibchas Muyscas — who are to the south of them, especially in Colombia, indicate a different origin of the Amerriques, and so far as we now know, their language having not yet been studied, they were in Nicaragua previous to the Nahuatl invasion, and were forced by floods and subsidences of land in western Nicaragua to emigrate to their present locality, about latitude 12° 15' north in Eastern Nicaragua.

It has recently been satisfactorily proven by Prof. Jules Marcou, of Cambridge, Mass., that it was the Amerrique people that Christopher Columbus and his men met and stayed with for about ten days in October, 1502, at or near the present town of Bluefields, situated on the Caribbean Sea.

In his *Lettera rarrissima* Columbus relates incidents of his fourth voyage of discovery, describing this people, and was deeply impressed by their manners and appearances, and also by the fact that each of the Amerriques was observed to "wear a mirror of gold," being the first natives of the "New World" that he discovered who wore ornaments of this metal.

⁵ An eminent American Anthropologist however declares from linguistic consideration that the Central American Aborigines came from Mexico. See D. G. Brinton, M. D., in Presidential address before "The American Association for the Advancement of Science."

⁶ Evidences of this subsidence are still to be traced in that section of country. See Proceedings Boston Society of Natural History, Vol. XXVI, Fol. 49-59.

⁷ The ancestors of these sculptors either came across the Pacific Ocean from Polynesia or Micronesia, at that date probably a part of Asia, or the latter were descendants of the former, who had crossed the ocean on a continental land route, or over a chain of nearly connected islands. Many eminent geologists believe that there was a connected land route between Asia and America during or immediately preceding the Glacial Epoch.

Columbus and a part of his mariners "ascended the river," evidently the present named Escandido or Bluefields river, but then probably known as the Carpa or Rama, for about sixty miles, with that people in search for gold. Because of obstructions, as fallen trees, cascades and falls, impeding navigation, the searchers for the yellow metal returned to their ships in the harbor at Bluefields. No doubt the one hundred and fifty men who accompanied the great discoverer on his last voyage, returned to Europe deeply impressed with the Amerriques, the only people seen by them, natives of the newly discovered world who wore habitually heavy ornaments and charms of brightly burnished gold, and, most probably, these mariners often and enthusiastically repeated in Europe the name Amerrique until it became familiar there to designate the newly discovered lands, known only as the "New World;" but thereafter as America. At present the Amerriques are few in numbers and appear to be dying off with unaccountable rapidity, although they are free from oppression and not afflicted, so far as known, by any deadly epidemic. They are at liberty to wander in their forests, and over their valleys and mountains in search of game undisturbed by other men.

Their great national destiny seems to have been accomplished and their end drawing near. Ere long they will no more be numbered among the living proud claimants of that great name, derived from their ancestors, and emblazoned in undying letters on one of the World's hemispheres. They will die in freedom unconquered by any other people, but their name, America, will live long after their existence and tribe or nation has become only an incident in Anthropology, a name unsullied by subjection, but brilliant on freedom's shield, from man's early history through thousands of centuries, and to continue a synonym symbol and sacred name to freemen's sons and daughters until the Earth is wandering dark and cold without a living tongue to lisp a name.

WHAT PATLATCHES ARE.

BY JAMES DEANS, VICTORIA, BRITISH COLUMBIA.

Read at a recent meeting of the Sir William Wallace Society of Victoria, B. C.

I have been requested to read before this Society a paper explanatory of the patlatches, of which we have heard so much of late in a number of communications in our local newspapers, from our Indian population, as well as from the missionaries who labor amongst them. The Indians claim a right to the ancient usages of their tribes and nations; while the missionaries oppose them on grounds of imaginary evils arising through ignorance of what these patlatches are. That there should be a certain amount of ignorance with regard to them will be seen when I say that amongst all the Indian usages none are so hard to be understood by the white population as are these patlatches. I have made them special subjects of study for over thirty years, and yet to-day I would not object to information on a few points. The fifth report of the committee appointed for the purpose of investigating and publishing reports on the industrial and social conditions of the North-western tribes of the Dominion of Canada for the Newcastle-Upon-Tyne meeting, 1889, of the British Association for the Advancement of Science, speaking of patlatches, says: "One of the most complicated and interesting institutions of these tribes is the so-called patlatch. Again it says: "It is somewhat difficult to understand the meaning of the patlatch."

A patlatch—not potlatch, as it is erroneously spelled by a few writers—is a Chinook word, equivalent to the English words to give,—as follows: Patlatch uikia, give me—patlatch yachka, give him or her—patlatch kliskea, give them, etc. It also means a gift or give away. There are at least five different sorts of patlatches.

The first I shall speak of, is when every tribe belonging to one nation, speaking one language, are invited by any one chief. Invitations are generally sent out three weeks previous. During the visit of the messengers to the village to which they have been sent, they seldom fail to ascertain how many of the tribe are likely to accept the invitation. Then, if the party giving the feast, or patlatch, thinks he has not got enough of goods, such as blankets, shirts, printed or white calico, Chilcat blankets, money and coppers, also canoes, he borrows from the members of his own tribe, for which he repays two for one; or, in other words, if say one shirt has been borrowed, two have to be returned, and so with everything.

When the visitors come every village usually comes by itself. There may be ten, twenty or thirty canoes, according to the number of inhabitants in the village or town, as they are called by the Haida tribes. These canoes always follow that of their chief. As they draw near the town, the visitors are always welcomed by a salute if the villagers possess a big gun. When the visitors got about twenty feet from the shore they would rest on their paddles, while the townspeople would all be squatted beside of their houses. Neither of the parties would exchange words for ten or fifteen minutes. Then a large bundle of cedar splints were placed, untied, before the visiting chief, who then stood up in his canoe. As soon as he did so a man sitting at his feet handed him armful after armful of these splints until all were passed. Meanwhile the chief was talking and throwing the splints ashore, in the following order: "This splint," he said, as he threw it ashore, "represents so much formerly obtained and so much repaid," two for one, and so on with all the other splints. When the last one was cast ashore the chief sat down. Then the village chief advanced and gave an address of welcome, telling them to come on shore, and telling at the same time his people to help. A rush was made for the canoes, and soon everything was snag ashore and the canoes up high and dry.

After this the visitors and the visited spent a few hours squatted in front of the houses, while an exchange of gossip continued until supper was ready, when all adjourned to the chief's house. The supper was served in long troughs placed on the floor, along both sides of which the people squatted in double rows, provided with spoons for the soup, water and grease. The flesh meats were seal, whale and wild fowl, cut into small pieces and carried to their mouths by the fingers. Then came a desert of dulse and grease, or, wild cherries and fish oil, afterward herring spawn. This was at the village of Comax twenty years ago. Doubtless they live better now.

When all the guests had arrived a large pile of goods was placed on a platform on a scaffold erected for that purpose, sometimes in front of the house and sometimes on its roof.

When all was ready the chief who gave the patlatch climbed upon the scaffold and began to throw the goods amongst the crowd below. Then began a scramble for each piece as it was thrown. I have known two parties get hold of a blanket and neither would let go until it was torn in strips. Of course, when torn it was of little use; then one of the party would arrange with the others for all the pieces, then sew them all together. I have often seen Indians weaving blankets of this sort. When there was money given away it was sometimes scattered amongst the crowd and sometimes thrown into the water, which always afforded lots of fun, as the youngsters dived for it. A patlatch of this sort might extend over two or three weeks, according to the amount of property held by the chief and his tribe. When there was nothing whatever left in

the village everyone packed up what he or she had got, then started for home, leaving the village as bare as the oak trees at yuletide. Although these people were left in poverty they all knew that after a few weeks, or months at furthest, everything would be returned double. Those who got presents knew very well that sooner or later they had to return double all they got. As I said at the beginning, this sort of patlatch was given to the various tribes forming one nation. Often a chief and his people of one nation and language would in friendship invite the people of another nation and language, but when that was done the invited were never expected to return anything. With this, the first sort of patlatch, I shall finish this paper, leaving the other four sorts of patlatcher to a second or perhaps a third paper. In each of the papers will be given the benefits of many years of research and close observance.

ABORIGINAL REMAINS OF BALSAM LAKE, ONTARIO, CANADA.

By G. F. LAIDLAW.

This district in Ontario is very rocky and hilly, and has almost countless numbers of lakes, lying to the North, all tributary to the chain of lakes known as the Trent waters, which was in the Huron days, one of their internal highways from their country, lying west of Lake Simcoe, to Montreal or Hochelaga, via Bay of Quintine. These waters are now being developed into the Trent Canal, Balsam Lake, being one of the larger links in this back country chain of lakes. The Lake lies north-east of Lake Simcoe and about seventeen miles distant. The height of land between these two lakes lies west of Balsam Lake at a distance of about one mile, waters to the east flowing into the Bay of Quintine on the north shore of Lake Ontario, and waters to the west flowing into the Georgian Bay, Lake Huron. The old trail connecting Lake Simcoe with Balsam Lake, was enlarged into a government road, and is now known as the Portage Road.

The Hurons crossed Lake Simcoe to the mouth of the Talbot River ascending it to what is now known as Champlains Landing, then taking the trail to West Bay, Balsam Lake, and from there by following the lakes, rivers, etc., would easily reach the eastern end of Lake Ontario, portaging when necessary. The Hurons had the option of another route to Balsam Lake, namely, ascending to Talbot River as far as possible, then crossing the height of land to North Bay, Balsam Lake. This would give them a shorter route to the outlet of Balsam Lake, and they would have only a short portage, and consequently could use the same canoes all the way, whereas if they used the southerly trail they would have to leave their canoes at Champlain's

landing and obtain others here, which would be a disadvantage in warlike operations. Parkman, the historian, mentions the fact that Champlain passed through this country in 1615, leading the Hurons to an attack upon the Iroquois. The Iroquois were probably well acquainted with the route too, and made use of it, going up from the eastern end of Lake Ontario, in their forays, when exterminating the Hurons.

The evidence shown by the variety and number of relics found along this trail especially at its eastern extremity, proves that it was in use from the earliest times. They consist of copper arrow heads and knives formed by beating into shape the pure native copper, stone axes, gouges, stone pipes, fragments of pottery, clay pipes semi Huron type, flint arrow and spear heads, scrapers, bone awls, gun flints, iron tomahawks, large French axes, fragments of gun barrels, hoop iron arrow heads, swords, and knives, etc.

This district evidently supported a large population, especially along this Huron trail, in fact along any of the old trails through this country. The people must have gathered in communities along the lines of communication, deducing from the number of village and camp sites. They had to depend to a large extent upon fish, for subsistence, and grew corn wherever possible, or when settled long enough to clean patches in the valleys. Parkman mentions that there was a dearth of game in the Huron country, owing to the dense population, and the same condition may have existed here, judging from the few animal remains found in their ash heaps.

There is some doubt if this section was, or can be included in or classed as Huron territory, judging from the comparison of relics, remains and graves; especially as the Jesuits mention no Huron town east of Lake Simcoe. Such village sites as I have explored and traced up exhibit no remains or relics showing contact with white men. I have made strict inquiry on this point, though modern relics abound in surface finds and later graves of the Mississagua Indians, who are of Algonquin stock, and took possession of the Ontario Northern after the extermination of the Hurons.

If the Jesuits or French traders visited the towns here, we would find on the village sites traces of their occupation, and it would also be recorded in their relations, but it can be deduced from above, that these villages must have been abandoned and their population scattered when the Jesuits appeared. This abandonment may have been just previous to the advent of the whites to this section, or it may have been ages before. Stumps of pine trees approximating 400 years of age have been pulled up disclosing charred corn and pottery shreds, etc., beneath their roots.

Whether or not these communities were deserted at one and the same time, or at different periods is now almost impossible to tell, but their relics all show the same class of workmanship and style, though not of finish, especially the clay pipes and

fragments of pottery; the pottery markings being almost identical, thus showing that they belonged to the one people, or nation. As in every site of aboriginal residence throughout this continent some relics are highly finished, and some are very poorly and roughly finished; but that may depend upon the individuality of the makers thereof. Often from the same grave highly and poorly finished weapons and ornaments of the same material are taken. Of village and town sites I know of at least ten good sized ones, between here and Lake Simcoe; six to the north, and four to the south of the trail. These, on exploration, have all yielded the same class of relics, etc. The sites are not very discernible on account of being cultivated for a greater or less number of years. They do not appear to have had any earth embankments around them, and I have never found or knew to be found any remains of palisades, such as enclosed the Iroquois and Huron villages. As to the shape or form of house they lived in, and of what material, this is a mere matter of known conjecture. If akin to, or part of the Huron nation they would probably have the Huron style of communal houses, technically known as "longhouses." Judging from the remains of ash heaps, and the surface extent of them, these houses were longer than broad, and inhabited for a long time.

These ash heaps produce evidences of their originators lives; the kind of food, etc., that was used. In the long winters here the Indians would not roam so much, and with their caches of corn and what fish they could get through the ice, and the little game that they could kill, and perhaps some meat preserved in the shape of pemican, they would pull through the winter as best they could, verging on starvation more and more as spring approached. The Jesuits record a number of cases of actual starvation, and now and then we hear even to this day, families of Montagnais Indians in the fastness of the Laurentian mountains starving to death before spring, sometimes even practicing cannibalism.

The ash heaps can be divided into two classes, those left on the site of the camp, and those that were formed by carrying the ashes to the outskirts of the village and there dumping them. These yield fragments of pottery, pipes, bone implements, ornaments, bones of animals, horns, tusks of bear and wolves, beaver jaws, turtle and clam shell sets, and will average 15 to 20 feet in breadth, and about 3 feet in depth.

The villages are off the trails, and are generally located on a hill where there is a patch of good soil, suitable for the growing of melons, corn, pumpkins, beans and tobacco. And, in long inhabited communities, various sorts of fruit and nut trees naturally grew up, a spring or running water being conveniently near.

There are quite a number of camp sites around the Lake shore, especially where there is a bit of sandy beach; these were probably fishing camps of the adjacent towns. One can pick up the usual relics on them. From the small area occupied, they

were probably occupied by one or two families. The islands in the lake show traces of occupation. Graves have been opened up on several. On Ghost Island there are two mound graves, the only ones in this part, circular in shape, about 20 feet diameter, and 18 inches high. I do not know what was obtained from these graves as they were opened some years ago. Rows of single graves also occur; these are indicated by depressions in the soil of about 3 feet in diameter, and 18 inches or more in depth. There are grave yards adjacent to the villages of this character, which on being opened disclose in some cases skeletons of people of a small stature reclining on the side with the knees drawn up to the chin, some also seem to be buried in a sitting posture, but no relics occur. In some cases the skeletons have decayed or have been removed, this class of graves are common here and to the east, but to the west of Lake Simcoe the ossuary style of burial was in vogue. Perhaps these single graves were opened at regular periods, and the remains interred in ossuaries, but as yet no ossuaries have been discovered in the immediate vicinity, though several were opened about 60 miles south last summer and a large number of skeletons obtained.

An occasional modern grave is discovered now and then around the lake shore, the bodies being buried in rough slab coffins, or wrapped in birch bark, accompanied with copper kettles, silver ornaments, bells, spoons, etc., and sometimes nothing. These last were perhaps the graves of those converted to Christianity by the earlier missionaries, and are concluded to be Mississagaus. Ghost Island is claimed to be a formerly corn planting ground, and the Pagan Indians in modern times lived on it, while the Christian Indians of the same tribe (Mississagus) lived on the adjacent Indian point.

Indian point is a point four miles long jutting down into the lake from the north end. Indians have lived on this point from ancient times down to a score or so of years ago. Both ancient and modern relics have been found there, together with a number of fire places, but being cultivated for a quarter of a century the traces are nearly wiped out. There is an extensive grave yard there, but the exact position of the single graves cannot be determined owing to cultivation. A few modern graves have also been opened there, but no relics have been obtained. The skeletons were enclosed in rough coffins, made of cedar slabs, about 4 inches thick, and fastened with nails of an old fashioned French make.

[To be Continued.]

SUNRISE AT STONEHENGE.

Quoted from the *Whitshire Times*, June 27, 1896.

Sunday, June 21, was what is termed the longest day—the day on which the sun reaches its greatest northern declination—and as usual numbers of people journeyed to Stonehenge in the hope of seeing the sun rise immediately over the Friars Heel, the great leaning stone, of which the legend runs that as the Devil was raising Stonehenge he muttered that “no one would never know how it was done.” But a passing Friar heard the words, and exclaiming, “That’s more than thee can tell,” fled for his life. The enemy flung the great stone after him, but hit only the Friar’s heel. Those who in this sceptical age doubt this legend, may examine the stone with the view of tracing the impress which the heel of the holy man left on the huge block of syenite as it struck him. What is certain is that the stone has been known from time to immemorial as the Friar’s heel, and it stands at some distance outside of the circle, and in a direct line with the flat slab known as the altar stone now partly covered by the fallen trilithons. The trip to Stonehenge to witness the sun rise on the longest day grows in favour, and according to the statements of some of the members of the Whitshire constabulary, who were on duty there, was a larger gathering on Sunday than on any previous occasion. The people came afoot from the villages near, from longer distances such as Salisbury, Trowbridge, Chippenham, Southampton, and Bournemouth. They came on cycles and in conveyances of all descriptions, from the humble donkey cart to the respectable gig, and even the lordly four-in-hand; there were quite a number of excursion breaks from Devizes and other towns, and altogether it is computed from two or three thousand visitors were at the stones, some of them hours before there was any possible chance of seeing the sun rise. By midnight some cyclists neared Stonehenge, and all through the night they came over the various down roads, their approaching lights, especially when they came in companies, having a pretty effect. Hundreds of machines were stacked round about the stones, while their riders eagerly seized upon the positions likely to give them the best view of the sunrise. The altar stone and the stones in the vicinity were a dense mass of people, and when the various vehicles added their quota of visitors, there was scarcely room to move in the inner circle. The weather was most favorable, the moon, well on to the full, shone in a cloudless sky through a portion of the night, and when it disappeared it was scarcely darker than at twilight. As 3 o’clock approached the crowd increased, and at 3:30 the horizon was anxiously scanned, and conjecture was busy as the

precise nature of the lower-lying strata of mist or cloud on the sky line. The precise time of sunrise set out in the calendar was 3:45, and as this approached a faint rosy tinge gradually spread over the portion of the horizon visible to those who, standing on the altar stone, were able to see the Friar's Heel through the centre of the three standing trilithous. The cloud or mist was too dense for more to be seen, and not till after 4 o'clock did the sun break through, and for a time disperse the clouds, though of course the effect was not precisely that which so many had come out to see.

THE ALPHABET MYCENÆAN, NOT PHŒNICIAN.

The opening address of the British Association by Mr. Arthur Evans, its President, and Keeper of Ashmolean's Museum at Oxford, dealt with "The Eastern Question in Anthropology." The now widely-known discovery of Mycenæan characters, which were borrowed in Crete by the Phœnicians, who refashioned them and gave them back in the shape of an alphabet to the west where they originated, has been strikingly confirmed by Mr. Evans's latest find—a steatite table of offerings found in the Dictæan Cave of Cretan Zeus, and inscribed with nine Mycenæan characters and two marks of punctuation. The certainty that our alphabet ultimately goes back to the Mycenæan civilization raises in a more acute form the already pressing question presented so brilliantly by M. Saloman Reinach in his "Mirage Oriental." Mr. Evans does not go so far as M. Reinach in emancipating the west from its traditional subservience to eastern influences, but both of them bid us say farewell to the long-accepted notions associated with a primitive seat of the Aryans.

That there is as yet no consensus of expert opinion as to the Mycenæan civilization, even among Anthropologists, appeared when Dr. Montelius read his paper on the Pelasgians and Tyrrhenians in Greece and Italy. Under these names he recognized phases of the Mycenæan civilization, which he derived through Asia Minor from the Hittites. Just here it was objected by Mr. Myres that, as the result of a most exhaustive search in Caria, he knew there were absolutely no traces of Mycenæan art or civilization to be found there. The same was true, Mr. Evans urged, of all other portions of Asia Minor, excepting the site of Hissarlik. Mr. Myres had previously read a paper on the prehistoric trade-routes of the Mediterranean and the Danube, recognizing Hissarlik as a Mycenæan outpost, planted with a view to the Dardanelles and the Danube line of communication. Thus it appears there was no line of contact between the Hittites of Cappadocia and the Mycenæan civilization, and Mr. Evans's contention would be borne out, that the Mycenæan civilization in the west derived little or nothing from Cappadocia, Egypt, or Assyria until it had reached a brilliant and independent maturity.

THE NATION, Oct. '96.

CERTAIN SHAMANISTIC CEREMONIES AMONG THE OJIBWAS.*

BY HARLAN I. SMITH,

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK.

In the vicinity of Saginaw Bay and its tributaries there still exist small, isolated bands of Ojibwa Indians, many living upon their own land, somewhat as do the poorer class of white farmers. They still retain some of their old customs, and although most of them are nominally Methodists, a surprisingly large number, on close acquaintance, reveal the fact that the influence and many of the old superstitions of the Méde still survive. These are overshadowed by white customs and Methodist teachings, except to him who penetrates into their innermost life as a friend, taking them as they are, and without attempting to change them.

Naturally the younger individuals, mingling more with the whites and being educated at government or public schools, do not acquire the knowledge of the language, or, much less, the ancient ceremonies and folk-lore of their ancestors.

From some of the older people and early settlers have been secured stray instances of shamanistic ceremonies practiced upon the sick. Disconnected as these may be, and premature as a description may seem, I have thought best to make them known, without waiting for further study, in order that they may be available to others.

Mr. Joseph Compau, a French fur trader, who settled in this region when it belonged to the Indians, told me that, about 1841, while living upon the Cass River, about ten miles above Saginaw, he was very sick with a severe pain for three or four days. At that time Mish-é ga sing, an old shaman, whose son now lives in Isabella County, came from near Tuscola. He brought a hollow bone about six inches long, the size of one's finger, and without administering any drug, or going through

*Presented before the Section of Anthropology at the 45th meeting of the American Association for the Advancement of Science, Buffalo, 1896.

noticeable movements or singing, he pressed the bone against Mr. Compau's side and sucked through it very hard. He then showed him a piece of black material, resembling charcoal, which he claimed to have sucked out of him through the tube, and persuaded Mr. Compau that it had been the cause of the pain, which would soon cease. Mr. Compau at once felt better and soon recovered. He said he fully believed in the cure.

In August, 1896, from the old shaman, Katimshiwa, now professing to be a devout Methodist, I secured a bone tube, which he claimed was the one he used for the removal of disease and pain. He was so sick and infirm as to be unable to talk much, and left me in doubt as to the exact way in which he used the tube. Although undoubtedly it was used in the well-known way for sucking out the disease spirit, yet from his feeble attempts at explanation, and from what he told me on former visits, I am led to believe that he also used it for other mystic rites. This tube was deposited in the American Museum of Natural History, New York.

Mr. Lemorandi, who is of Ojibwa and French origin, and who has lived and traded with the Indians for many years, told me the following: Nach chic o me, who lived at the Poyganing Settlement between Saginaw and Bay City, was sick, and Saganima, a shaman of the Northern Peninsula, came to see him. After singing all around him, he went to the sick man and said: "I do not wonder you are sick. You have lost your soul and are about to die. A raven took your soul away from you. I can get it back." Saganima then went to the mystic wigwam he had made for the purpose, and went through his ceremonial formula of words. He then transformed himself into a hawk, and flew up and away after Nachchicome's soul. He soared over the middle of Lake Huron, when he saw the raven, darted upon him, and wresting the stolen soul from him, put it in a small box so it could not escape, and carried it back to the mystic wigwam. Here he assumed his original form, then went to the now nearly expired Nachchicome saying, "I secured your soul." He then sang, and telling the sick man to open his mouth, blew in the lost soul, and Nachchicome was well again.

The accompanying picture, No. 941, of Nachchicome was taken some years later as he was in gala dress. It shows the combination of white costume with Ojibwa, and the influence of primitive ideas on the white method of dress.

Mr. Lemorandi is also authority for the following: when he was buying furs near Mt. Pleasant in the spring while the Indians were making maple sugar, Sinogemaw's squaw was very sick, and was going to die. They sent for Shawanasowa, an old shaman, who came in a canoe with Mr. Lemorandi and began his ceremony with singing and the use of various little charms. He then told them her soul was gone, that another shaman Nagaek had taken it, because he was angry. Shawanasowa was more powerful than Nagaek, and in the night

went, by superhuman power, several hundred miles to visit him. He obtained her soul, placing it in a small box for safety, and brought it back. He had the squaw open her mouth, and blew in the soul. She recovered and lived to be an old woman.

Mrs. Eva Golson, the daughter of an early pioneer, told me that as late as in 1866, when her mother was living at the mouth of the Cass River, and was sick with "chills and fever," she went for an Ojibwa shaman, after failing to get relief from her own people. When he came he refused to perform his ceremonies over her because she was a woman, and said his squaw doctored women, he cured men. He went for his squaw and returned in about two weeks, having waited for the time most favorable for the cure. Two squaws came with him. After bringing them he went away in his canoe, but returned for them when they were through. The old squaw began by covering her patient with many blankets. Then she made her a drink by boiling powdered "herbs, barks and roots." After part of this had been swallowed the remainder was placed under the blankets and left to steam, while the blankets were kept down tight. Then these blankets were removed, one by one, until about the usual bed covering remained. This occupied about four hours of the afternoon. She came the next day, found her patient well, and, receiving her compensation, went her way.

From Katimshiwa have also been obtained specimens of his medicines.

A STUDY OF THE HIGH CLIFF-DWELLINGS AND CAVE-TOWNS.

BY STEPHEN D. PEET.

The discovery of the Cliff-dwellings was a startling event. It occurred in 1874, in connection with the work of Hayden's Geological Survey. An account of it was published in the Annual Report of 1875-6, and excited at the time very general interest. No archæological discovery has ever awakened more attention and excited more curiosity than this. Many ruined dwellings had, indeed, been discovered by the various parties that had traversed the Great Plateau, and descriptions of them had been published, but they were ordinary pueblos, with which the public had become somewhat familiar, while these presented a style of aboriginal dwellings which was not known to exist elsewhere. The first consisted of a large number of apartments and constituted a village, while these were solitary and isolated dwellings, suitable only for the home of a single family. The pueblos were situated in the valleys of the streams or upon the mesas, and access to them was comparatively easy, but cliff-dwellings were in the sides of the cliffs, and at such marvelous heights as to be almost inaccessible. The pueblos were generally in plain sight, and along the ordinary familiar routes, while these were in a remote district, amid wild and lonely cañons, and so hidden as to escape common observation. The pueblos were inhabited, and the people gave the discoverers a welcome, but the cliff-dwellings were lonely and uninhabited. No one knew the history of those who had dwelt in them, or could tell the fate of those who had left them.

It is not then strange that great interest was awakened, and much speculation and startling theories were advanced concerning them. We may say, however, that the interest has not ceased, nor has the mystery which enveloped this subject entirely disappeared. Scientific students have entered into the midst of them, and studied the details of their structure, and so accumulated facts, that our knowledge has become more accurate and speculation less fanciful; yet the history of the people is wanting, and there is no reliable tradition concerning them.

It is not our purpose to furnish a history of the Cliff-dwellers, nor to advance any theory concerning their age or final destiny, but we shall take up the narrative which was given by the discoverers, and examine the facts brought out by them, and endeavor, if possible, to define the character of the culture, and describe the life of the people.

I. Let us consider the geographical locality in which the cliff-dwellings were situated. On this we shall find much aid from the study of the map as well as the narrative.

We notice that the pueblos and a certain class of cave-dwellings are scattered all over the region embraced in the bounds of the four great states of New Mexico, Colorado, Arizona and Utah; but there is a district lying close about the meeting place of the four states in which not only the pre-historic ruins of the plateaus and the valleys are found, but also many cliff-dwellings built into the dizzy recesses of the cañon walls, imposing in their position and structure. Probably there is no other district in this once widely-inhabited region richer in these high cliff-dwellings than this Great Plateau, 30 miles long and 15 wide, called the "Mesa Verde."

This great timbered plateau rises in rough, forbidding cliffs from 1,500 or 2,000 feet above the valley of the stream which passes through it, making a series of deep cañons which are distinguished for their remarkable scenery, isolation, and wildness. In the walls of these arid cañons and in the midst of the high mountains the Cliff men built some of their most elaborate and imposing fortresses, but wrung a meagre subsistence from the valleys below, fighting, meanwhile, for even this scanty foothold in the wilderness against the attack of a lurking, but a constantly-increasing savage foe.

It will be seen from the following descriptions that this is one of the most singular regions of the entire country. It forms an isolated area, which was filled with an extensive population in pre-historic times, and was undoubtedly connected with the other areas to the south-east and south west. It was, apparently, a most secure retreat from the attacks of the wild tribes which were constantly hovering about the edges of the Great Plateau region, and were frequently besieging the Pueblos in their homes. It was, however, a mountainous region, apparently destitute of resources for subsistence, and might be regarded as a poor place for permanent occupation. The question arises: "What kind of a life did the Cliff-dwellers lead in this region? how did they secure a subsistence for themselves and their families?" On this point there have been various theories, for some have maintained that they were wild hunters, others that they were agriculturists. We maintain, however, that they were mountaineers, and in proof would call attention to the following extracts: Mr. W. H. Holmes says:

The Rio San Juan drains a great basin, covering over 20,000 square miles, as well as several great mountain masses bordering it. The tributaries to it head in the southern face of the Sierra Abajo, which is one of the highest peaks.

The view from its summit is one of more than ordinary interest; to the east the view is interrupted only by the La Plata and San Juan mountains,

100 miles away ; in the south are the Sierra Carisso ; in the west are the Henry Mountains ; to the north, the Sierra La Sal, all in plain view, yet outlining a circle, and including an area of 20,000 square miles. To the south lies the broad valley of the Rio San Juan, the delicate thread which lines its bank being barely visible through the notches cut by the deep side cañons. Beneath us, on the west, is the Rio Colorado, though its course is scarcely traceable through the labyrinth of cliffs and cañons. Beyond the San Juan, to the south-west, the wonderful forms of Monumental Valley can be seen. Beyond this the outlines of a broad table-land, which extends toward the Rio de Chelley and south-west toward the Moqui country. The drainage of this valley on the north connects it with the Rio Dolores, the divide between them being somewhat narrow, and the head waters interlocking through the Great Plateau, separate these streams and the different branches of the San Juan. The table-lands intervene between the streams, on the west, such as Montezuma, the Hovenweep, the McElmo and the Epsom Creek, obtaining a very nearly uniform height of 500 feet, running up to nearly 1,000 feet as we approach the Dolores divide. The San Maguel Mountains lie in the extreme north east corner, and constitute the divide between the waters of the Animas and Dolores on the south, and Rio San Maguel on the north. This divide reaches an altitude of 11,500 feet. A conical peak, called Lone Cone, is a very prominent landmark.*

Mr. W. H. Jackson describes the same region in the following words :

The "Mesa Verde" extends north and south about 20 miles, and east and west about 40 miles. It is of a grayish-yellow cretaceous sandstone, with a very nearly horizontal bedding, so that the escarpment is about equal on all sides, ranging from 600 to 7,000 feet in height. The side cañons penetrate the mesa and ramify it in every direction, always presenting a perpendicular face, so that it is only at very rare intervals the top can be reached. But once up there we find excellent grazing and thick groves of cedar and piñon pine. From the bottom of the cañon up, the slopes of the escarpments are thickly covered with groves of cedar, gnarled and dwarfed. Below, the cottonwood and willow grow luxuriantly beside the streams, while dense growths of a reedy grass tower above our heads as we ride through it. Throughout its entire length the cañon presents an average width of about 200 yards.

Mr. F. H. Chapin, the great mountain climber, says :

It is in that section of Colorado which is embraced by the "Mesa Verde" that the grandest, as well as the most picturesquely situated ruins have been discovered. This in connection with the fact that this land of cañons and mesas is surrounded on the north and east by one of the most beautiful mountain chains in the world, renders the country the most fascinating field for the explorer.

Mr. W. H. Jackson says :

All that portion of the country lying between the "Mesa Verde" and the Sierra Abajo, covers an aggregate of some 2,500 square miles. Their labyrinthian cañons head close to the Dolores on the north, and ramify the plateau in every direction with deep and desolate gorges and wide and barren valleys. There is not a living stream throughout this whole region. Between the Montezumas and the Hovenweep is a high plateau, running north and south from the San Juan to the Dolores. Upon this we found the remains of many circular towers, these generally occupying slight eminences.

* The map shows ruins and the streams upon which they are located, but faintly represents the mountainous character of the country,

This mesa, or plateau, averages about 500 feet in height above the surrounding country, but does not contain a spring or a drop of water, except such as may remain in holes in the rocks after a shower. As cultivation was out of the question, it is very likely that these towers were look-outs, or places of refuge for the shepherds, who brought their sheep here to graze.

As a great portion of this region is a bare bed of rocks, with the soil in the lowlands, nearly impervious to moisture, the winter's showers soon gather together their waters in great floods in the main channels, and form the deep "washes" so characteristic of the country. In some valleys, where the drainage is considerable, these "washes" attain a depth of from thirty to forty feet, and are impassable for many miles.

Mr. Jackson further says in reference to this region :

The bottoms are from three to five miles in width, and bordering the stream, covered with dense growths of cottonwood and willows. The broad and fertile alluvial lands, well covered with grass, and the low sage bush benches bordering them, will, undoubtedly, prove a rich agricultural possession at no distant day.*



FIG. 1. THE FIRST HIGH CLIFF-HOUSE DISCOVERED.

Mr. W. H. Holmes also says :

The district examined by our party covers an area of nearly 6,000 square miles, chiefly in Colorado, but which include narrow belts in the adjacent territories of New Mexico, Utah and Arizona. It lies wholly on the Pacific slope, and belongs almost entirely to the drainage system of the Rio San Juan, a tributary of the Colorado of the West. . . . In the greater

* See Hayden's Report for 1876 ; page 412.

part of this region there is little moisture apart from these streams, and, as a consequence, vegetation is very sparse, and the general aspect of the country is that of a semi-desert. Yet there is bountiful evidence that at one time it supported a numerous population; there is scarcely a square mile in the 6,000 examined that does not furnish evidence of previous occupation by a race totally distinct from the nomadic savages who hold it now, and, in many ways superior to them. . . . I observe the fact that the great bulk of remains are on, or in, the immediate neighborhood of running streams, or by springs that furnish a plentiful supply of water during the greater part of the year. . . . I also notice that the country is by no means an entire desert. All along the stream-courses there are grass-covered meadows and broad belts of alluvial bottom, affording, if properly utilized, a considerable area of rich tillable land.

Such is the description of the region in which the Cliff-dwellings, as such, were found, a description which shows that the region was well chosen as the retreat of a people who seem to have been fugitives from the attacks of savage tribes, and who made these mountain fastnesses their abode at some period in the distant past, the date of which is now unknown.

We are impressed by the thought that the Cliff-dwellers were hardy mountaineers, but, like other mountaineers, were accustomed to draw their subsistence from the valleys. Doubtless, there was a strong influence in the scenery and surroundings, which made it easy for them to have followed this double kind of life, and make their homes so high in the sides of the cliffs, and yet carry on their toils at so great a distance.

They are not, however, the only people who have had their fields at a distance from their homes, for it is well known that the Pueblos are, even to this day, accustomed to form camps at a distance from their villages, and spend the summer in cultivating the fields, and carrying back their produce to the villages when gathered.

One would suppose from the character of these mountain fastnesses that the people would be the last to be driven out, yet as we read the descriptions of the pueblos on the Cañon de Chaco, and especially the description of the cliff-dwellings in the "Mesa Verde," we find them all abandoned, the entire region left desolate, with only a few wandering tribes occupying the river valleys, placing their rude tents amid the ruins of the elaborate stone houses and towers and temples of the preceding people.*

* The home of the Cliff-dwellers may be divided into four distinct localities, in each of which the ruins were discovered at different times and by different explorers. The division is as follows:

1st. On the rivers which flow from the south to the north, including De Chaco, Amarillo, De Largo, apparently form the home of a people who dwelt in pueblos of the regular terraced class, descriptions of which have been given by Gen. Simpson, Newberry and others, from 1830 to 1851.

2nd. The rivers which flow from the north to the south, including the La Plata, Animas and San Juan, seem to have been the abode of a people who dwelt mainly in caves or cavate houses, descriptions of which have been given by W. H. Holmes in his report, while in connection with the Hayden survey, in 1875 and 1878.

3rd. The region which is drained by the Mancos, Navajo Canon, and which is called the "Mesa Verde," is the locality where high cliff-dwellings are the most numerous, these have been described by W. H. Jackson, W. H. Holmes, and F. H. Chapin, in 1881; Dr. Beardsall, in 1887; and Baron Nordonskjöld, in 1892, some of which we have designated High Cliff Dwellings.

II. We turn next to the discovery of the Cliff-dwellings, or the so-called "High Houses," and the different classes of structures which were associated with them. We find that while the high houses were the most interesting, yet there were many ruined towers situated in the valley, and clusters of ruined pueblos in various directions, all of which need to be studied in order to make up our minds as to the culture of the Cliff-dwellers. Let us then, take these in their order of discovery. The following is a description given by Mr. W. H. Jackson:

In the extreme south-west corner of Colorado are groups of old ruined houses and towns, displaying a civilization and intelligence far beyond that of the present inhabitants. Commencing our observation in the park-like valley of the Mancos, between the Mesa and the mountains, we find that the low benches that border the stream upon either side bear faint vestiges of having, at some far-away time, been covered with dwellings, grouped in communities, apparently, but now so indistinct as to present to the eye little more than unintelligible mounds. By a little careful investigation, however, the foundations of great square blocks, of single buildings and of circular inclosures can be made out; the latter, generally, with a depressed center, showing an excavation for some purpose.

Entering the cañon at its upper end we strike into the old Indian trail, which comes over from the head of the Rio Dolores, and passing down this cañon a short distance, turns off to the left, and goes over to the La Plata.

Grouped along in clusters and singly were indications of former habitations, very nearly obliterated, and consisting mostly, in the first four or five miles, of the same mound-like forms noticed above, and accompanied always by the scattered, broken pottery.

As we progressed down the cañon the same general characteristics held good, the great majority of the ruins consisting of heaps of *debris*, a central mass considerably higher and more massive than the surrounding lines of subdivided squares.

We now commenced to note another peculiar feature. Upon our right, the long slopes of protruding strata and *debris* formed promontories, extending out into the cañon. Upon these, and not more than 50 feet above the stream, we found frequent indications of their having been occupied by some sort of works, the foundations of which, in every case, were circular, with a deep depression in the center, and generally occurring in pairs, two side by side, ranging from 10 to 20 feet in diameter. There was no masonry of any kind visible, but, thickly strewn all about, any quantity of broken pottery. Above were indications of habitations in the face of the cliff, but not marked enough to warrant further search. At those places where the trail ran high up, near the more precipitous portion of the bluff, we found remnants of stone walls, inclosing spaces of from five to twelve feet in length in the cave-like crevices, running along the seams. Nothing of any greater importance was found up to the time we made camp at nightfall.

Our camp for the night was among the stunted piñons and cedars immediately at the foot of the escarpment of the "mesa," its steep slopes and perpendicular faces rising nearly 1,000 feet above us.

4th. The region which lies to the westward of the Mesa Verde, and which is drained by the Montezuma and the McElmo, the Hovenweep on the north, the Rio de Chelly on the south, is distinguished for the large number of remarkable ruins, some of which have been described by Gen. Simpson, Dr. W. H. Hoffman, W. H. Jackson and W. H. Holmes, and which constitute a series which is as varied in its character as those to the east of the Mesa Verde, but in which there are some remarkable specimens of High Cliff Dwellings, or what might be called cave villages, or cliff towns.

5th. A region situated at the head waters of the Verde River, contains a number of cliff-dwellings, which resemble those on the Mancos Canon. One of these was discovered by Mr. W. H. Hoffman, in 1874, at a place called Montezuma Wells; another was discovered by Dr. J. W. Fewkes, in 1896, at a place called Red Rocks. [See American Anthropologist, August, 1896; page 265.]

Now comes the discovery of the first "High House:" See fig 1.

Just as the sun was sinking behind the western walls of the cañon, one of the party descried, far up the cliff, what appeared to be a house with a square wall and apertures, indicating two stories, but so far up that only the very sharpest eyes could define anything satisfactorily. We had no field-glass with the party, and to this fact is probably due the reason we had not seen others during the day in this same line, for there is no doubt that ruins exist throughout the entire length of the cañon, far above and out of the way of ordinary observation.

The discovery of this one, so far above anything heretofore seen, inspired us immediately with the ambition to scale the height and explore it, although night was drawing on fast, and darkness would probably overtake us among the precipices, with a chance of being detained there till night. All hands started up, but only two persevered to the end. The first 500 feet of ascent were over a long, steep slope of *debris* overgrown with cedar; then came alternate perpendiculars and slopes. Immediately below the house was a nearly perpendicular ascent of 100 feet that puzzled us for a while, and which we were only able to surmount by finding cracks and crevices into which fingers and toes could be inserted. From the little ledges occasionally found, and by stepping on each other's shoulders, and grasping tufts of *yucca*, one would draw himself up to another shelf, and then, by letting down a stick of cedar, or a hand, would assist the other. Soon we reached a slope, smooth and steep, in which there had been cut a series of undulating hummocks, by which it was easy to ascend, and without them, almost an impossibility.

The house stood upon a narrow ledge, which formed the floor, and was overhung by the rocks of the cliff. The depth of this ledge was about 10 by 20 feet in length, and the vertical space between the ledge and overhanging rock some 15 feet. The house occupied the left-hand half as we faced it; the rest being reserved as a sort of esplanade, a small portion of the wall remaining, which cut it off from the narrow ledge running beyond. The edges of the ledge upon which the house stood were rounded off, so that the outside wall was built upon an incline of about 45 degrees. The house itself, perched up in a little crevice like a swallow's nest, consisted of two stories, the total height being about 12 feet, leaving a space of two or three feet between the top of the walls and the overhanging rock.* The ground plan showed a front room, about 6x9 feet in dimensions, back of it two smaller rooms, the face of the rock forming their back walls. They were each about five or seven feet square, and in the lower front room are two apertures, one serving as a door and opening out upon the esplanade, about 20x30 inches in size, the lower sill 24 inches from the floor, and the other a small outlook, about 12 inches square, up near the ceiling, and looking over the cañon beneath. In the upper story a window, corresponding in size, shape and position to the door below, commands an extended view down the cañon. Directly opposite this window is a similar one, opening into a large reservoir, or cistern, the upper walls of which come nearly to the top of the window. The entire construction of this little human eyrie displays wonderful perseverance, ingenuity and some taste. Perpendiculars were well regarded, and the angles carefully squared. The stones of the outer rooms, or front, were all squared and smoothly faced, but were not laid in regular courses, as they are not uniform in size, ranging from fifteen inches in length and eight inches in thickness down to very small ones.

About the corners and the windows considerable care and judgment were evident in the over-lapping of the joints, so that all was held firmly together. The only sign of weakness is in the bulging outward of the front wall, produced by the giving way, or removal, of the floor beams. The back portion is built of rough stone, firmly cemented together.

Most peculiar, however, is the dressing of the walls of the upper and lower front rooms, both being plastered with a thin layer of firm adobe cement, of about an eighth of an inch in thickness, and colored a deep

* This house is described by W. H. Holmes.

maroon red, with a dingy white band, eight inches in breadth, running around the floor, sides and ceiling. In some places it has peeled away, exposing a smoothly-dressed surface of rock.

Ruins of half a dozen lesser houses were found near by, but all in such exposed situations as to be quite dilapidated. Some had been crushed by the overhanging wall falling upon them, and others had lost their foothold and tumbled down the precipice. One little house in particular, at the extremity of this ledge, about fifty rods below the one described above, was especially unique in the daring of its site, filling the mind with amazement at the temerity of the builders, and the extremity to which they must have been pushed.

Mounting our own animals we pushed on down the cañon, which now opened out into quite a valley, side cañons opening in from either hand, adding much to the space. Every quarter of a mile, at the most, we came upon evidences of former habitations, similar to those already described. Two or three miles below the house in Fig. 1, we discovered a wall standing in the thick brush upon the opposite side of the river.

The walls before us were a portion of an old tower. See fig. 1, and 2, in plate. ¹

In the midst of a group of more dimly-marked ruins or foundations, extending some distance in each direction from it. As seen in the figure referred to, the tower consists of two lines of walls, the space between them divided into apartments, with a single circular room in the center. The outside diameter of all is 25 feet, that of the inner circle 12 feet, and as the walls were respectively 18 and 12 inches in thickness, left a space of four feet for the small rooms. This outer circle was evidently divided into six equal apartments, but only the divisions marked in the diagram could be distinguished.

Half a mile below, in the vertical face of the rock, and at a height of from 50 to 100 feet from the trail, were a number of little, nest-like habitations.* Communications with the outside world was from above to a small window-like door, not shown in the sketch. Two small apertures furnish a look-out over the valley.

Near by, upon a low ledge, and readily accessible from below, is a string of five or six houses, evidently communicating,—mere kennels compared with some others—made by walling up the deep cave-like crevices in the sandstone. The same hands built them that lived in the better houses; the masonry being very similar, especially the inside chinking, which was perfect, and gave the walls a very neat appearance. ²

Two or three miles further and the cañon changes in feature again, the highest level of the *mesa* coming forward, and towering over the valley with a thousand feet of altitude, the bottom lands widening out to a half and three-quarters of a mile in breadth.

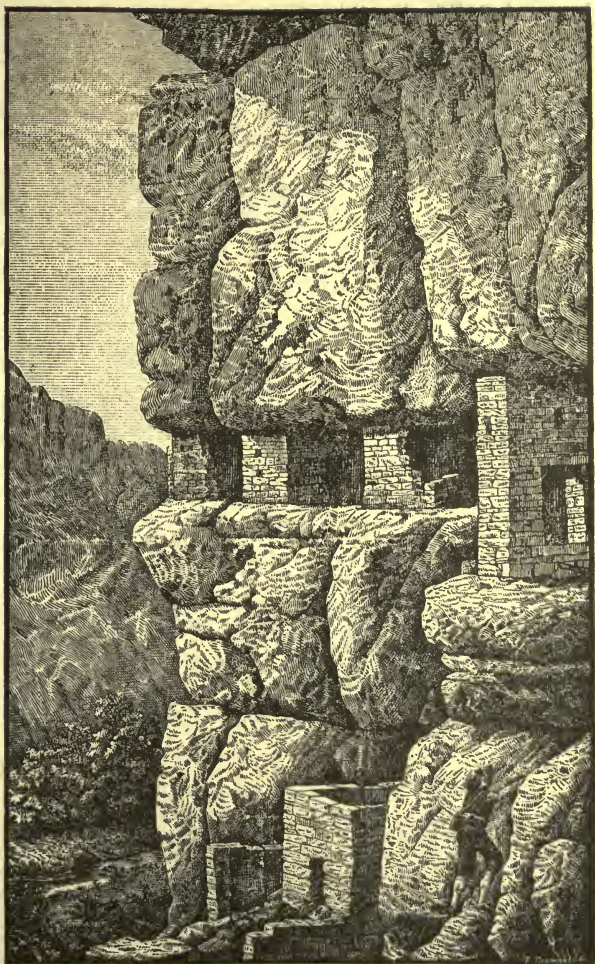
Referring to Fig. 1, the position of these houses can be seen in the dark heavy lines near the summit, just above the most precipitous portion of the bluff, generally at a height of from 600 to 800 feet above the level of the cañon.

The second discovery: (see plate fig. 7.)

In the high bluff, on the right hand in the sketch, are some of the most curious and unique little habitations yet seen. While jogging along under this bluff, fully 1,000 feet in height, and admiring its bold outlines and brilliant coloring, one of our party, sharper-eyed than the rest, descried, away up near the top, perfect little houses, sandwiched in among the crevices of the horizontal strata of the rock of which the bluff was composed. Two of the party started up to scale the height and inspect this lofty abode. By penetrating a side cañon some little ways, a gradual slope was found that carried them to the summit of the bluff. Now, the trouble was to get *down* to the houses. This was accomplished only by crawling along a ledge of

¹ Fig. 5 plate illustrates one of them and their general character.

² Mr. E. A. Barber says that there was a tower just below the first "High House." (See Am. Naturalist, Aug., 1878.)



CLIFF AND DWELLINGS ON THE MANCOS CANON

Plate I.

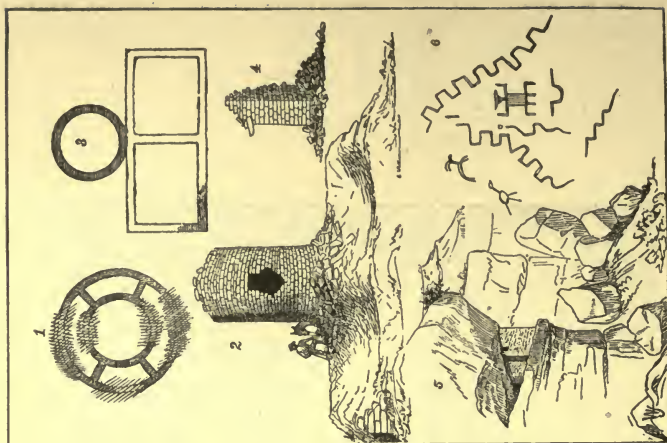


Plate II.

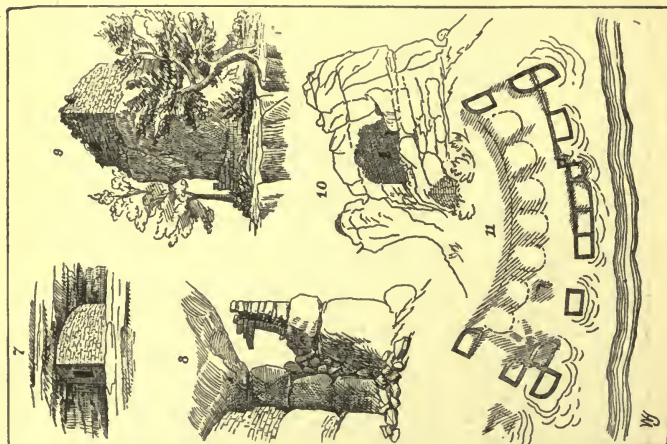
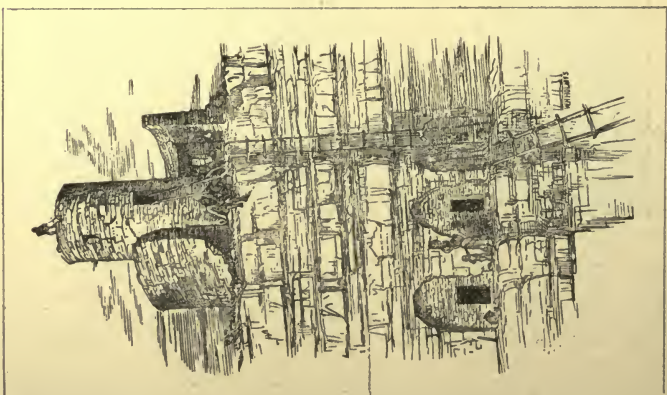


Plate 3.



about 20 inches in width, and not tall enough for more than a creeping position. In momentary peril of life—for the least mistake would precipitate him down the whole of this dizzy height—our adventurous seeker after knowledge crept along the ledge until the broader platform was reached, upon which the most perfect of the houses alluded to stands. The ledge ended with the house, which is built out flush with its outer edges. This structure resembles in general features the cliff-houses already spoken of. The masonry is as firm and solid as when first constructed, the inside being finished with exceptional care. In width it is about five feet in front, the side wall running back in a semi-circular sweep; in length fifteen, and in height seven feet. The only aperture was both door and window, about 20x30 inches in diameter. In its uniqueness consisting in its position on the face of the bluff, to the casual observer this building it would not be noticed once in fifty times in passing, so similar to the rocks between which it is plastered does it appear from our position on the trail. A short distance to the right, and on the ledge above, is another building of somewhat ruder construction, but with corners square and the walls truncated.

The towers and observatories which were found in the vicinity of these remarkable cliff-dwellings are next described:

Proceeding down the broad, open cañon over the now very easy trail, we espied upon the opposite side of the stream a tower of apparently greater dimensions than the ones noticed above. The tower only remained; this is circular, 12 feet in diameter, and now about 20 inches in height, the wall being about 16 inches in thickness. Facing the valley northward is a window-like aperture, about 18x24 inches in size, the lower lintel some seven or eight feet above the base. Fig 2 in plate.

A short distance above our camp, and upon the top of the *mesa*, which, at this point, is not more than 125 feet above the valley, we found a tower very similar to that on the Mancos—(see Fig. 5)—but considerably larger, and surrounded by a much greater settlement. It is about 50 feet in diameter, and, like the Mancos one, double-walled, the space between the two about six feet in width, and sub-divided into small apartments by cross-walls, pierced with communicating doors or windows. Immediately surrounding this tower is a great mass, of which it is the center, of scattered heaps of stone *debris*, arranged in rectangular order, each little square with a depressed center, suggesting large sub-divided buildings, similar to the great community-dwellings of the Pueblos and Moquins and the old ruins of the Chaco. Upon the south-east corner of this group, and upon the very edge of the *mesa*, are the remains of another smaller tower, and below it, founded upon the bottom of a small cañon, which run up at right angles to the McElmo, is a portion of a heavy wall. This group covers a space of about 100 square yards, while adjoining it, on the *mesa*, is group after group on the same plan,—a great central tower and smaller surrounding buildings. They cover the whole breadth and length of the land. Half a dozen miles down, and we came upon several little nest-like dwellings, very similar to those in Figs. 5 and 7, but only about 40 or 50 feet above the valley. Two miles farther, and we came upon the tower shown in Plate Fig. 9, upon the summit of a great square block of sandstone, some forty feet in height, detached from the bluff back of it. The building, upon its summit, is square, with apertures like windows upon two faces, looking east and north, and very much ruined, but still standing in some places about 15 feet above the rock on which it is built. At the base of the rock is a wall running about it, a small portion only remaining, the rest thrown down and covered with *debris* from the house above.

While passing the mouth of a wide side cañon, coming in from the right, a tall, black-looking tower caught our eyes, perched upon the very brink of the *mesa*, overlooking the valley.—(See plate fig. 10.)

A huge block of sandstone has rolled down from the escarpment of the *mesa* above, lodging upon the very brink of a bench midway between top and bottom, and upon this the tower is built, so that from below both appear as one. They are of the same diameter, about 10 feet, and some 18 feet in height, equally divided between rock and tower. In construction,

it is similar to those already described, of single wall. It was evidently an outpost, or watch-tower, guarding the approach to a large settlement upon or beyond the *mesa* lying above it.*

The solitary house discovered by Mr. Jackson, (see plate) on the Canon De Chelley should be mentioned in this connection. He says :

Its situation is very similar to that of the town shown in plate 4, but it is over-hung by a less height of the impending bluff. It was reached by a series of steps cut into the rock.

The house 20 feet in height, consists of two stories built against the sloping wall of the bluff. The lower story is 10x18 feet square, divided into two rooms, with a door communicating between the two, and a large door opening outward. The upper floor appears to have been in one room with one large window facing outward. Extensions erected upon either side and also a kind of structure in front, resembling a balcony covering the lower door-way. About twenty rods away at the foot of the bluff, there is a deep natural reservoir or basin, about thirty feet in diameter and the same in depth, that seems to have retained a perpetual supply of water.

The most remarkable specimen of a high-cliff house is the one discovered by Mr. W. H. Holmes, and described as follows :

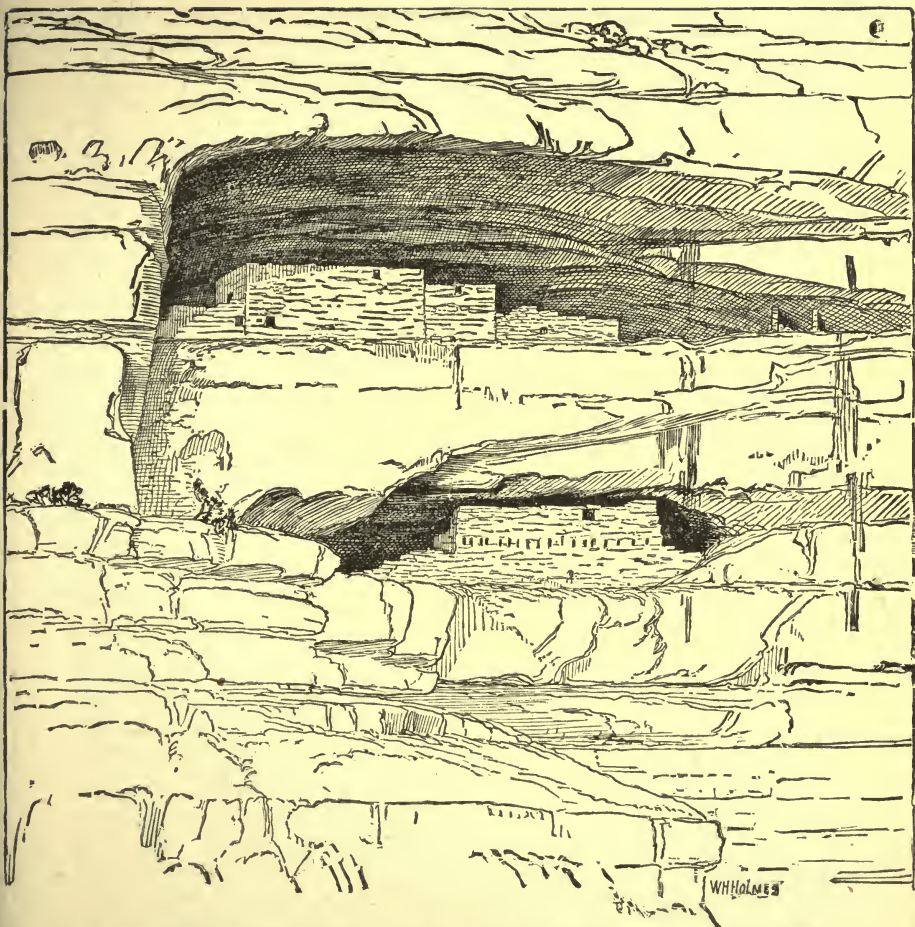
The group given in this plate is of a very interesting and remarkable character. It was first observed from the trail far below, and fully one-fourth of a mile away. From this point, by the aid of a field-glass, the sketch given in the plate was made. So cleverly are the houses hidden away in the dark recesses, and so very like the surrounding cliffs in color, that I had almost completed the sketch of the upper houses before the lower, or "sixteen-windowed" one was detected. (see plate.)

They are, at least, eight hundred feet above the river. The lower five hundred feet is of rough cliff-broken slope, the remainder, of massive bedded sandstone, full of wind-worn niches, crevices and caves. Within one hundred feet of the cliff top, set deep in a great niche, with arched, overhanging roof, is the upper house, its front wall built along the very brink of a sheer precipice. Thirty feet below in a similar, but less remarkable niche, is the larger house, with its long line of apertures, which I afterward found to be openings intended rather for the insertion of beams than for windows.

The lower house was easily accessible, and proved to be of a very interesting character. It occupies the entire floor of a niche, which is about sixty feet long and fifteen feet in depth at the deepest part. The front walls are built flush with the precipice, and the partition walls extend back to the irregular wall of rock behind. Portions of the wall at the left, viewing the house from the front, are greatly reduced ; but the main wall, that part which contains the window-like openings, is still thirteen or fourteen feet high. The arrangement of the apartments is quite complicated and curious, and will be more readily understood by reference to the ground plan—(Fig. 1.) The precipice-line, or front edge of the niche floor, extends from *a* to *b*. From this the broken cliffs and slopes reach down to the trail and river, as shown in the accompanying profile—(Fig. 3.) The line *b, c, d* represents the deepest part of the recess, against which the walls are built. To the right of *b* the shelf ceases, and the vertical face of rock is unbroken. At the left, beyond *a*, the edge is not so abrupt, and the cliffs below are so broken that one can ascend with ease. Above, the roof comes forward and curves upward, as seen in the profile.

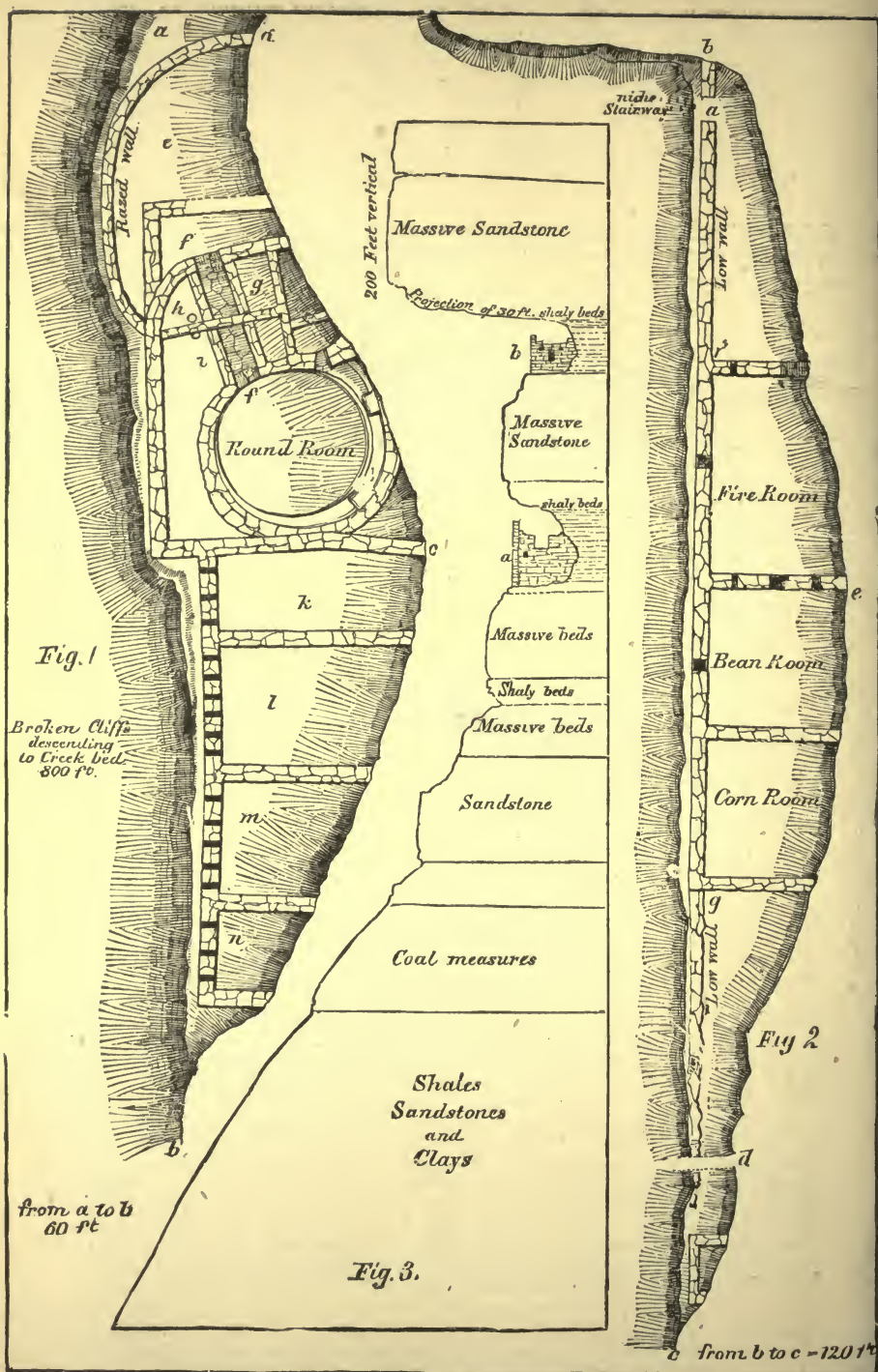
The most striking feature of this structure is the *round-room*, which occurs about the middle of the ruin, and inside of a large rectangular apartment. The occurrence of this circular chamber in this place is highly sig-

* See U. S. Geological and Geographical Survey of Colorado and Adjacent Vicinity, 1874. Quotations from "Ancient Ruins in South-Western Colorado," by W. H. Jackson.



SIXTEEN WINDOWED HIGH HOUSE--800 FEET HIGH. W. H. HOLMES.

This High House reminds us of the Cliff-Dwellings discovered by Nordenskjöld in 1892, though the arrangement of the buildings on two separate ledges differs from any found elsewhere. Nordenskjöld has described certain houses as furnished with balconies projecting in front of the house. He has spoken of others as having port-holes or openings in the walls through which arrows were shot, and quotes from Castaneda a description of port-holes built diagonally through the walls of the pueblos. The narrow passage which Holmes described as designed for entrance into the "Estufa," Nordenskjöld thinks was designed for ventilation and speaks of this as characteristic of the Estufas of cliff-dwellers.



SECTION AND GROUND PLAN OF THE HIGH HOUSES.

nificant, and tends greatly to confirm my previously-stated opinion, that the circle had a high significance with these people. Their superstitions seem to have been so exacting in this matter that even when driven to the extremity of building and dwelling in the midst of these desolate cliffs, an inclosure of this form could not be dispensed with; a circular estufa had to be constructed at whatever cost of labor and inconvenience.

Its walls are not high and not entirely regular, and the inside is curiously fashioned with offsets and box-like projections. It is plastered smoothly, and bears considerable evidence of having been used, although I observed no traces of fire. The entrance to this chamber is rather extraordinary, and further attests the peculiar importance attached to it by the builders, and their evident desire to secure it from all possibility of intrusion. A walled and covered passage-way, *ff*, of solid masonry, ten feet of which is still intact, leads from an outer chamber, through the small intervening apartments, into the circular one. It is possible that this originally extended to the outer wall, and was entered from the outside. If so, the person desiring to visit the estufa would have to enter an aperture about twenty-two inches high by thirty wide, and crawl, in the most abject manner possible, through a tube-like passage-way nearly twenty feet in length.

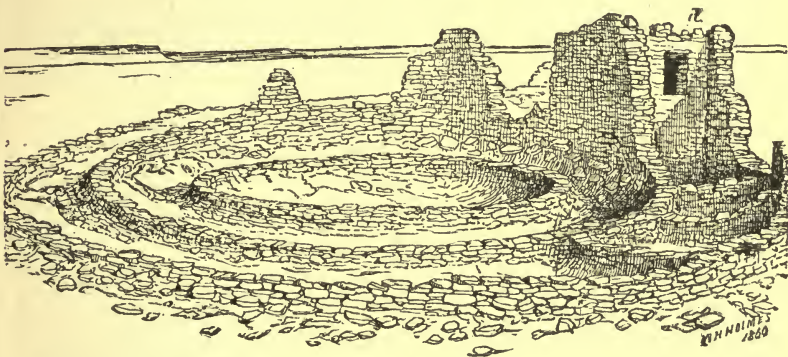


FIG. 5 RUINED TOWER ON THE MANCOS.

My first impression was that this peculiarly-constructed door-way was a precaution against enemies, and that it was, probably, the only means of entrance to the interior of the house, but I am now inclined to think this hardly probable, and conclude that it was rather designed to render a sacred chamber as free as possible from profane intrusion. The apartments, *l, k, m, n*, do not require any especial description, as they are quite plain and almost empty. The partition walls have never been built up to the ceiling of the niche, and the inmates, in passing from one apartment to another, have climbed over. The row of apertures indicated in the main front wall are about five feet from the floor, and were doubtless intended for the insertion of beams, although there is no evidence that a second floor has at any time existed.

In that part of the ruin about the covered passage-way the walls are complicated, and the plan can hardly be made out, while the curved wall enclosing the apartment is totally overthrown. . . . The rock-face between this ruin and the one above is smooth and vertical, but by passing along the ledge a few yards to the left a sloping place was found, up which a stairway of small niches had been cut; by means of these an active person, unencumbered, can ascend with safety. On reaching the top, one finds himself in the very door-way of the upper house — (*a*, Fig. 2) — without standing-room outside of the wall, and one can imagine that an enemy would stand but little chance of reaching and entering such a for-

treasury, if defended even by women and children alone. The position of this ruin is one of unparalleled security, both from enemies and from the elements. The almost vertical cliff descends abruptly from the front wall, and the immense arched roof of solid stone projects forward fifteen or twenty feet beyond the house. (See Section, Fig. 3.) At the right the ledge ceases, and at the left stops short against a massive vertical wall. The niche stairway affords the only means of approach.

The house occupies the entire floor of the niche, which is about one hundred and twenty feet long by ten in depth at the deepest part. The front wall to the right and left of the doorway is quite low, portions having doubtless fallen off. The higher wall, *fg*, is about thirty feet long and from ten to twelve feet high, while a very low rude wall extends along the more inaccessible part of the ledge, and terminates at the extreme right in a small enclosure, as seen in the plan at *c*.

In the first apartment entered there were evidences of fire, the walls and ceiling being blackened with smoke. In the second, a member of the party, by digging in the rubbish, obtained a quantity of beans, and in the third, a number of grains of corn, hence the names given. There are two small windows in the front wall, and the doorways communicate between rooms separated by high partitions.

Figure 3 is given for the purpose of making clear the geologic conditions that give shape to the cliffs, as well as to show the relations of these houses to cliffs. The hard and massive beds of rock resist the erosive agents, the soft and friable beds yield, hence the irregularity. The overhanging cliffs, the niches, the benches, *a*, is a section of the lower house, *b*, of the upper.

It has heretofore been supposed that the occupants of these houses obtained water either from the river below or from springs on the mesa above; but the immense labor of carrying water up these cliffs, as well as the impossibility of securing a supply in case of a siege, made me suspect the existence of springs in the cliffs themselves. In three or four cases these springs have been found, and it is evident that with a climate a very little more moist than the present, a plentiful supply could be expected. Running water was found within a few yards of the group of houses just described, and Mr. Brandegee observed water dripping down the cliffs near a group of small houses on the opposite side of the cañon.

Mr. Holmes also discovered various towers which were associated with ruined dwellings. He says:

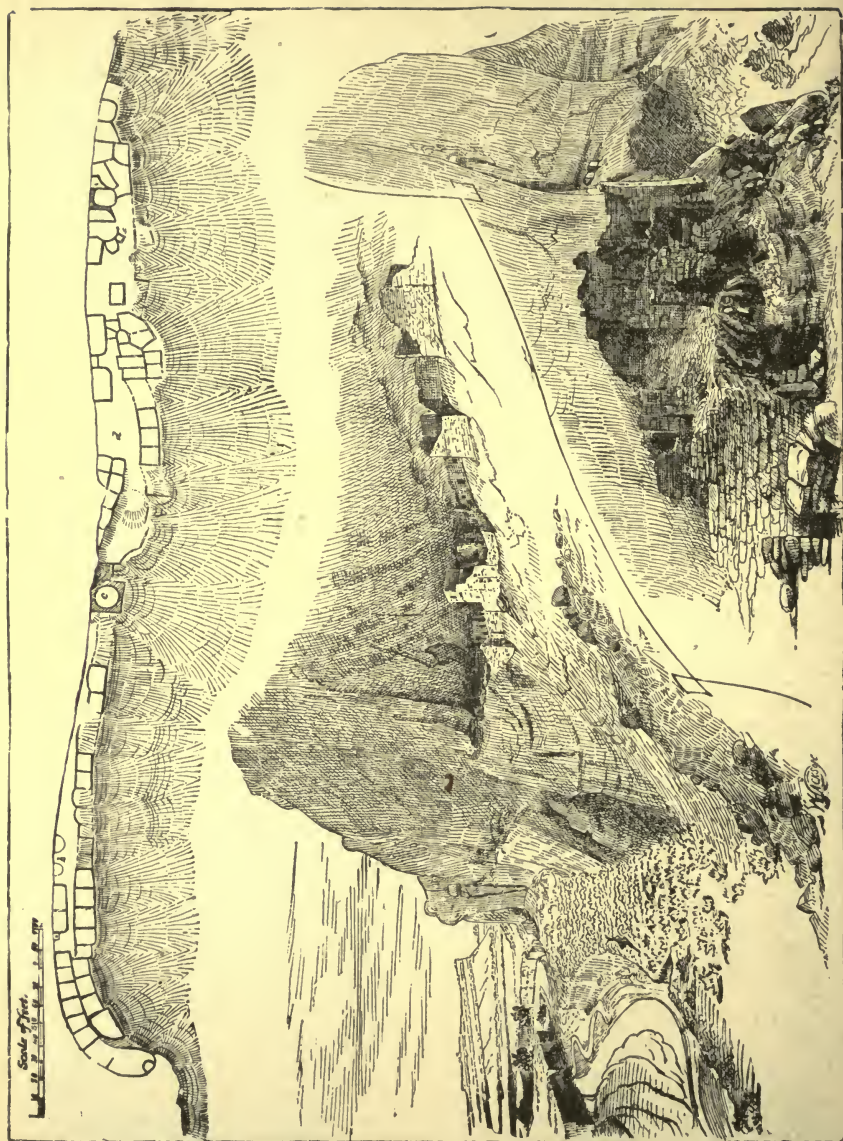
The ruin, of which a plan is given, occurs on the left bank of the Mancos, about eight miles above the foot of the cañon. It is one of the best preserved specimens of the ruined towers, and seems to have been built with much skill. It is nine feet in diameter on the inside, and about sixteen feet high. There are three rectangular apartments attached, the walls of which are almost leveled with the ground. In the side of the tower facing the river is a window, about eight feet from the ground and two feet high by one and a half wide. I had been previously led to the conclusion that these towers were, in all cases, built without windows or openings of any kind within reach of the ground from without, and it is not improbable that this opening did not communicate with the outside, but served as a doorway between the tower and one of the adjoining apartments. The advantage of such an arrangement in a defensive work, such as we may suppose this to have been, is clearly apparent, and evinces not a little intelligence and forethought on the part of the builders. Being built in connection with dwellings and places of resort, they could, in case of alarm, be reached with ease from within, but be altogether secure from without.—(Hayden's Report, p. 393)

This plate illustrates one of the more interesting groups of cliff-houses, or fortresses, of the Rio Mancos. It occurs about ten miles from the foot of the cañon in a subordinate cliff on the west side. This low cliff is of massive sandstone, and is washed by the river, the trail being crowded back

* See Fig. on page 1-1, Hayden's Report, 1878, page 391.



SOLITARY HOUSE ON McELMO CANON.



CLIFF TOWN IN CANON DE CHELLEY.

against the steep wall. At the height of about forty feet above the river a bed of shale occurs in the sandstone, which, being easily disintegrated, has been weathered out and carried away, leaving a sort of horizontal groove some four feet high and from four to six feet deep. In this a row of diminutive houses has been built. Three of these are almost perfect, having a fresh, new look that certainly belies their age. Four others^a are much more decayed, and fragments of wall only cling to the cliffs. They have been made to occupy the full height and depth of the crevices, so that when one reaches it at the only accessible point he is between two houses, and must pass through these to get at the others. The doorways are quite small, and bear no evidence of the fitting or hanging of doors; and the windows, of which a number open to the front, are but a few inches square.

III. This leads us to the explanation of the different structures, and its bearing upon the Cliff-dwellers' problem.

We have seen that there were houses of all sizes and shapes scattered among the cliffs, some of them in the valleys, others at varying heights; thus showing that an extensive population formerly existed here. We have, however, seen that the region was, at the time of the discovery, incapable of supporting any such population.*

The question is, "How did the people who dwelt in these houses, and seemed to have been permanent occupants, gain their subsistence?"

There have been various theories formed in answer to this. Some have imagined that the people were hunters, and gained their subsistence by following the game at great distances, leaving their families in the houses which were hidden away amid the cliffs, and so constituted fortresses as well as homes. Others have imagined that the people who inhabited these cañons, in common with those who occupied the cave villages and pueblos which were scattered through the valleys on either side, kept domestic animals, and depended upon these, in part, for a living. The more common opinion is that the people followed a varied life; like all mountaineers, they depended partly on the game, partly upon the animals which they were enabled to domesticate, but mainly upon the cultivation of the soil in the valleys. The latter is the opinion which is favored by the study of the structures, as the following analysis will show:

(1.) While the houses were built at different heights and of different sizes, they were found on the valleys of the streams arranged in groups or clusters, each group embracing different classes of structures; houses built in the sides of the cliffs; also towers, cells, caches, store-houses and occasional fortresses.

(2.) The towers were situated in the valleys, but associated with the High-cliff dwellings, some of them were on slight eminences, and others upon isolated rocks, but all of them in places where they commanded a distant view. These served as signal stations or look-outs, as well as places of refuge for the men who

* It was occupied by a few wandering tribes of wild Indians, and seemed to be incapable of supporting any more than these.

may have been cultivating the fields and so gaining subsistence, while their families were dwelling high up in the rocks, and from their position were secure from the attacks of the enemies which were so much dreaded.

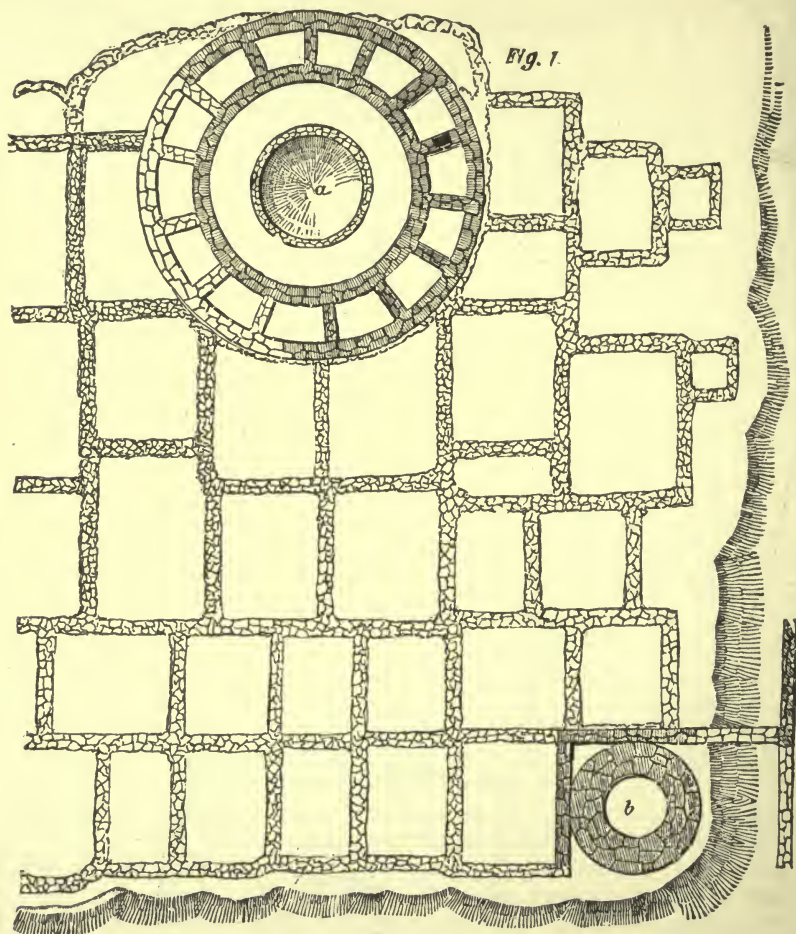
(3.) The towers were constructed in the shape of circles, and tained a central chamber, which was surrounded by a series of cells, also arranged in the form of a circle, conveying the idea that they may have been estufas, or assembly places, as well as watch-towers.

(4.) The High-cliff houses were not mere solitary dwellings of isolated families, or the accidents of a period or particular time, but were the parts of a general system which prevailed extensively through this region, and were the results of a life which was somewhat permanent. It was, to be sure, the life of fugitives, who were in mortal fear of enemies, which were constantly lurking about the valleys and were besieging their homes.

(5.) The people were, perhaps, no more timid than others, but they could not continue their usual domestic life and remain in the valleys, for their habitations there were constantly beset with danger. The men, indeed, might continue their agricultural pursuits, and find refuge in the towers which were erected at the various points along the valleys, but the families must be removed. It was a question, then, which danger they would risk, and which hardship they would subject their wives and children to; the danger of the sudden attack of the savage foe, or that which might come from falling off from the dizzy heights. There was hardship and exposure in climbing up the steep cliffs to reach their high homes, and carrying to these eyries the provisions for their sustenance. It was unusual to build separate houses and isolate them from the villages, for this would break up the clan-life and divide them into families, a thing which would be done only in a last extremity. We do not need, however, to conclude that village life might not be continued even when the houses were thus scattered, for the elements were all present. The homes were placed amid the cliffs, the estufas, or assembling places, in the valleys, the towers, or look-outs, were on the rocks, and the store-houses and caches scattered here and there, but they were always found in colonies.

(6.) It appears to be a peculiarity of the Pueblo tribes that the men universally lived separate from the women and children, and made the estufas not only the place for assembling together during the day, but also the place in which they would sleep at

* It will be noticed that there was great variety to these, for some of them were mere deserted caves, which had been hewn out of the rocks, but which were accompanied by the usual towers, which served for defence, lookouts and assembling places for the men. Others were the pueblos, which had been once arranged with the honey-comb fashion—the apartments joined close together, but all in ruins. The most interesting class was that which exhibited the village life in its integrity, and which could be called the ruins of cave villages, or cliff villages, for in these the towers, storehouses, estufas, courts, as well as houses, were all crowded together into the side of a precipitous cliff.



ANCIENT PUEBLO AND RUINED TOWERS ON THE Mc ELMO

night, the women and the children having their abodes in the rooms which were arranged about the terraces, and were protected by the inaccessible character of the walls which surrounded them. We have only to apply this state of things to the new and changed circumstances of the people, and to magnify the defenses, increase the distance between the sleeping places of the men and those of the women and children, to see how the same kind of life could be continued. Among the *Pueblos*, the *kivas*, or *estufas*, were generally placed in the midst of the chamber, but at a lower depth, or holes were excavated in the courts, and the *kivas* were constructed in these; but here the cliffs intervened, the men making their common resort in the midst of the fields where the attacks of the enemy could be met, but the women finding their safety in the heights of the cliffs.

IV. Now, it will be noticed that this explanation is borne out by the testimony of Mr. W. H. Holmes, who accompanied Mr. Jackson the following year, and discovered a large number of cave-houses and several cliff villages or cliff towns.

The following is the language of Mr. Holmes:

The ruins of this region, like most others of the extreme west and south, are the remnants, in a great measure, of stone structures.

As to situation, they may be classed very properly under three heads: (1), Lowlands, or Agricultural Settlements; (2), Cave Dwellings; and (3), Cliff-houses, or Fortresses.

Those of the first class are chiefly on the river bottoms, in close proximity to water, in the very midst of the most fertile lands, and located without reference to security or means of defence. Those of the second are in the vicinity of agricultural lands, but built in excavations in low-bluff faces of the Middle Cretaceous shales. The sites are chosen also, I imagine, with reference to security; while the situation of the cliff-houses is chosen with reference to security only. They are built high up in the steep and inaccessible cliffs, and have the least possible degree of convenience to field or water.

As to use, the position, for the most part, determines that. The lowland ruins are the remains of agricultural settlements, built and occupied much as similar villages and dwellings are occupied by peaceable and unmolested peoples of to-day. The cave-dwellers, although they may have been of the same tribe and contemporaneous, probably built with reference to their peaceable occupations as well as to defence but it is impossible to say whether or not they made these houses their constant dwelling-places. The cliff-houses could only have been used as places of refuge and defence.

During seasons of invasion and war, families were probably sent to them for security, while the warriors defended their property or went forth to battle; and one can readily imagine that when the hour of total defeat came, they served as a last resort for a disheartened and desperate people.*

The first group of ruins observed by Mr. Holmes was situated on the Rio La Plata, about twenty-five miles above its junction with the San Juan, and five miles south of the New Mexican line. He says:

It is, doubtless, the remains of a large, irregular village, and stands on a low terrace, some twenty feet above the river bed, and near the center of a

* See Hayden's Report for 1876, p. 374.

large, fertile valley. It will be seen by reference to the plate, which includes only the more important part of the town, that the buildings have been isolated, and, in a measure, independent of each other, differing in this respect from most of the groups of ruins farther south and west. . . . North of this are scattered a number of inferior ruins, the walls of which are not always distinctly marked.

South of the large circle is a mass of ruins, covering some 15,000 square feet, but so much reduced that nothing further could be determined than the fact that it had contained a large number of irregular apartments. Nowhere about the ruins are there any indications of defensive works, and the village, which is scattered over an area of over two miles in circuit, has no natural defences whatever.

The second group of ruins visited by Mr. Holmes contained a group of cave dwellings and towers, which were situated on the cliffs, but at a moderate height above the valley.*

I observed in approaching that a ruined tower stood near the brink of the cliff, at a point where it curves outward toward the river, and, studying it with my glass, detected a number of cave-like openings in the cliff face about half way up. On examination I found that they had been shaped by the hand of man. The arched openings are arched regularly above, and generally quite shallow.

The hard stratum served as a hard floor, and, projecting in many places, made a narrow platform, by which the inhabitants were enabled to pass from one house to another. It is probable that they were walled up in front, with doors and windows, though no fragment of the wall is preserved.

The engraving gives a fair representation of the appearance of these dwellings and their relations to the rooms above. The ruins are three in number, one rectangular and two circular.

The rectangular is placed over the more northern group of cave-dwellings. The small tower is situated on the brink of the cliff also, above the principal groups of cave-houses. About 150 yards to the south-west are the remains of another structure, built on a larger and grander scale, as the diameter of the outer wall was about 140 feet. That they belong to the community of the Cave-dwellers, and serve as their fortresses, council-chambers and places of worship, would seem to be natural and reasonable inferences. Being on the border of a low mesa country, the strong outside walls were, doubtless, found necessary to prevent incursions from that direction; while the little community, by means of ladders, was free to pass from dwelling to fortress without danger of molestation. (See fig. 12.)

A large group situated on this stream, about 10 miles above its mouth, was subsequently examined. In one place in particular, a picturesque outstanding promontory was full of dwellings, literally honey-combed by the earth-burrowing race; and as one from below views the ragged window-pierced crags, he is unconsciously led to wonder if they are not the ruins of some ancient castle, behind whose mouldering walls are hidden the dead secrets of a long-forgotten people. But a nearer approach quickly dispels such fancies, for the windows prove to be only the doorways to shallow and irregular apartments, hardly sufficiently commodious for a race of pigmies. Neither the outer openings or the apertures are large enough to allow a person of large stature to pass, and one is led to suspect that these nests were not the dwellings proper of these people, but occasional resorts for women and children, and that the somewhat extensive ruins below were their ordinary dwelling places. On the brink of a promontory above stands the ruins of a tower, still twelve feet high, and similar, in most respects, to those already described. These ruined towers are very numerous.

Mr. Holmes also discovered a group of ruins which mark the site of an ancient village, built after the honey-comb pattern,

* Situated on the San Juan River, about 35 miles below the mouth of the La Plata and 10 miles above the Mancos. Here the vertical bluff-face is from 35 to 45 feet in height.

with apartments adjoining, and *estufas*, or circular chambers, in the midst of the apartments. This *estufa* differed from others which are found elsewhere, in that the central chamber was surrounded by a series of chambers built in the form of a circle, thus indicating that the *estufa* in this region was used as a place of permanent abode. This confirms what we have said about the use of the towers which are so numerous in the valley of the San Juan, but are peculiar to the region.* He says:

The group partially illustrated in this plate, is situated on a low bench within a mile of the main McElmo, and near a dry wash that enters that stream from the south. It seems to have been a compact village or community-dwelling, consisting of two circular buildings and a great number of rectangular apartments. The circular structures, or towers, have been built in the usual manner, of roughly-hewn stone, and rank among the very best specimens of this ancient architecture. The great tower is especially noticeable, on account of the occurrence of a third wall, as seen in the drawing and in the plan at *a*. In dimensions it is almost identical with the great tower of the Rio Mancos. The walls are traceable nearly all the way round, and the space between the two outer ones, which is about five feet in width, contains fourteen apartments, or cells. The walls about one of these cells is still standing to the height of twelve feet, but the interior cannot be examined on account of the rubbish, which fills it to the top. No openings are noticeable in the circular walls, but doorways seem to have been made to communicate between the apartments; one is preserved at *d*.

The inner wall has not been as high or strong as the others, and has served simply to enclose the *estufa*. This tower stands back about one hundred feet from the edge of the mesa and near the border of the village. The smaller tower, *b*, stands for

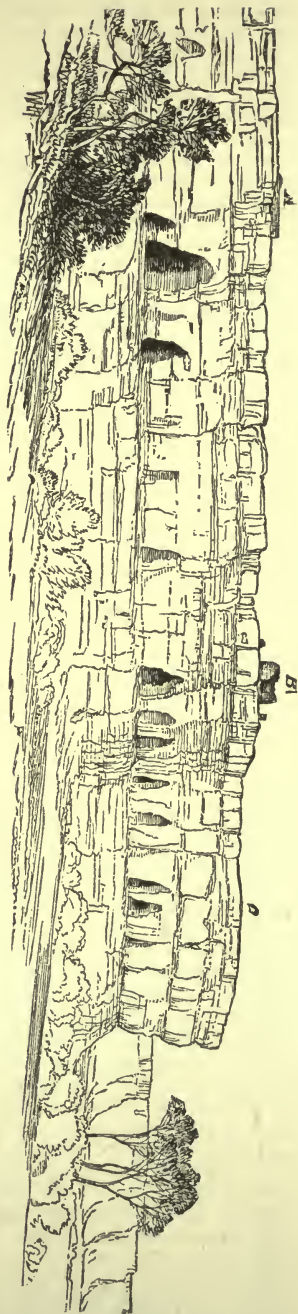


FIG. 6. CAVE HOUSES AND RUINED TOWERS.

* See Hayden's Survey for 1876, p. 398.

ward on a point that overlooks the shallow gulch, it is fifteen feet in diameter; the walls are three and a half feet thick and five feet high on the outside. Beneath this ruin, in a little side gulch, are the remains of a wall twelve feet high and twenty inches thick. The remainder of the village is in such a state of decay as to be hardly traceable among the artemisia and rubbish. The apartments number nearly a hundred, and seem, generally, to have been rectangular. They are not, however, of uniform size, and certainly not arranged in regular order. . . . The site of this village can hardly have been chosen on account of its defensive advantages, nor on account of the fertility of the surrounding country. The neighboring plains and mesas are as naked and barren as possible. The nearest water is a mile away, and during the drier part of the season the nearest running water is in the Rio Dolores, nearly fifteen miles away. To suppose an agricultural people existing in such a locality, with the present climate, is manifestly absurd. Yet, every isolated rock and bit of mesa, within a circle of miles, is strewn with remnants of human dwellings.

Another very important group of ruins is located in the depression between the Mesa Verde and the Late Mountains, and near the divide between the McElmo and Lower Mancos drainage. It was christened Aztec Springs.

The site of the spring I found, but without the least appearance of water. The depression formerly occupied by it is near the centre of a large mass of ruins, similar to the group last described, but having a rectangular, instead of a circular, building, as the chief and central structure. This I have called the *upper house* in the plate, and a large walled enclosure, a little lower on the slope, I have, for the sake of distinction, called the *lower house*. These ruins form the most imposing pile of masonry yet found in Colorado. The whole group covers an area of about 480,000 square feet, and has an average depth of from three to four feet. This would give in the vicinity of 1,500,000 solid feet of stone work. The stone used is chiefly of the fossiliferous limestone that outcrops along the base of the Mesa Verde, a mile or more away, and its transportation to this place has doubtless been a great work for a people so totally without facilities.

The upper house is rectangular, measures 80x100 feet, and is built with the cardinal points to within five degrees. The pile is from 12 to 15 feet in height, and its massiveness suggests an original height at least twice as great. . . . Two well-defined circular enclosures, or *estufas*, are situated in the midst of the southern wing of the ruin. The upper one, *a*, is on the opposite side of the spring from the great house, is 60 feet in diameter, and is surrounded by a low stone wall. West of the house is a small open court, which seems to have had a gateway opening out to the west through the surrounding walls. The lower house is 200 feet in length by 180 in width, and its walls vary 15 degrees from the cardinal points. The northern wall, *a*, is double, and contains a row of eight apartments, about seven feet in width by twenty-four in length. The walls of the other sides are low, and seem to have served simply to enclose the great court, near the centre of which is a large walled depression (*estufa B*).*

Mr. Holmes further says:

My conclusions in reference to the history of the ancient inhabitants of this region, as drawn from my observations among the ruins, briefly outlined, are as follows: "The ancient peoples of the San Juan country were, doubtless, the ancestors of the present Pueblo tribes of New Mexico and Arizona. A comparison of the ancient with the modern architecture, and a consideration of the geographical relations of the ancient and modern Pueblos, lead very decidedly to this conclusion. They have, at one time or other, occupied a very extensive area, which includes the greater part of the drainage of the Rio Colorado. Their occupation of this region dates back very many centuries, as attested by the extent of the remains and their advanced state of decay."

* Dr. J. S. Newberry visited this region in 1876, and discovered a series of ancient ruins. He says of it: "Like most of the ruined pueblos of New Mexico, it consisted of a series of small rooms clustered together like cells in a beehive. Near the principal edifice are mounds of stone, representing subordinate buildings. Among these are numerous large depressions, marking the place of cisterns, or *estufas*."

EDITORIAL.

THE INSPIRATION OF AMERICAN HISTORY.

Various historical societies in the west are having their anniversaries, and several western cities have had their celebrations. Among these, the celebration at Cleveland, Ohio, of its centennial, and the celebration at Burlington, Iowa, of the 50th anniversary of the admission of the state are the most noteworthy.

These celebrations have occurred in the midst of the great political excitement, and have been attended with more or less of political discussion, but they have furnished the opportunity to look over the past, and note the progress of the interior during the last century. The celebration of the "Chicago Day" was in the same direction, but the date to which the citizens looked back was that of the burning and rebuilding of the city in 1871—twenty-five years ago. These are important events and the records are likely to be preserved.

There is, however, a broader view of American history than any taken by any local historical society or by any city celebration, no matter how large or how important its history. It is a view which takes in the whole west, includes the history of exploration and the navigation of the "great lakes," the discovery of the upper Mississippi and that of the Ohio, and the first contact with the Indian tribes of the interior, and shows that the local interests of the western cities and states are connected with the interest of the whole country. In this way, the study of geography as well as history, becomes an inspiration to every American citizen.

It is not necessary that anyone should travel in order to realize the wonderful unity there is to this continent, made such by the Almighty when the continent was created. There is great inspiration that comes to one who is so fortunate as to pass from the sea board either at Portland, Boston, or New York, along any of the great historic water ways which stretch so far into the interior, and from time to time, greet ones eyes with their wide expanse for the sight reveals the wonderful resources of the interior, and the natural facilities for developing a great nation. The commercial traveler, and the business man, who gets this view becomes enlarged, and his plans naturally take in the whole continent. Wherever there are barriers intervening between the waterways, artificial canals are to be introduced, and the net work of commerce is soon to be made complete.

The sea-board is to be connected with the head of the great lakes, and this again with the head-waters of the great rivers. Though mountains may intervene between the streams which flow into the Gulf of Mexico and those that flow into the Pacific ocean, they are to be penetrated and such a wealth of mineral will come forth as will surprise the nation. The study of the great waterways is still more inspiring. There are three periods of human history recorded upon their banks. In the first place, the great cataract of Niagara Falls, as well as St. Anthony Falls, contain the time piece by which we may ascertain the age of man, both glacial and pre-glacial man; second, in the monuments which are scattered along its shores are found the records of the mound-builders, and the earliest neolithic age; third, along these water-courses the Aborigines have sailed for many years before the advent of the white man. The changes which came upon them introduced the iron age and protohistoric period. Next came the historic age, which was marked by the presence of the white man, and the erection of buildings and vessels which were prophetic of the great improvements which were to follow. That little vessel called the Griffon, which was built on the shores of the Niagara above the Falls, was the first of a grand fleet, which, like a flock of birds, should spread their white wings above the waters, to be followed by others propelled by means then unknown. These three periods should be taken into the account by the local historical societies.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

HELD ITS FORTY-FIFTH MEETING AT BUFFALO, N. Y., AUG. 22d TO 27th.

The work in Anthropology was of considerable interest, as the papers were all well prepared and carefully discussed without special diversion for the sake of popular effect.

The program was followed without changing the order throughout.

The address by Miss Alice C. Fletcher was upon the "Emblematic use of the Tree in the Dakotan Mythology and Customs." It showed that the tree figures in the early history of religious development of all nations, but with the Dakotans was associated with the worship of the Thunder-bird. In their ceremonies the pole bearing the topmost branches of a living tree as an emblem of the presence of the Wakanda, the supernatural being, and was typical of tribal unity and strength. On Tuesday, a resolution and memorial on the death of Capt. Bourke, prepared by Dr. Washington Mathews, and was read by Dr. Brinton. An interesting discussion over two papers, read by Prof. F. G. Wright and Prof. F. W. Putnam, on Fresh Geological Evidence of Glacial Man in Trenton, N. J. This consisted of a number of Argillite specimens which had been taken out of the undisturbed gravel and sand, and from be-

neath a layer which abounded with neolithic relics. Prof. Wright had spent one day in excavating, but Mr. Volk, an assistant of Prof. Putnam's, had spent many weeks, and their testimony seemed to agree. Dr. Brinton and Mr. McGee pointed out the fact that the operations of Philadelphia Academy, the Bureau of Ethnology, the U. S. Geological Survey and Geological Survey of New Jersey had only reached negative results. Other general papers were read as follows: A Ceremonial Flint Implement from Tennessee, by Gates P. Thruston; Pagan Symbols on Gravestones in New England, by Horace C. Hovey; Decoration upon Pottery, by C. C. Willoughby; Prehistoric Ruins in Guatemala, by John R. Chandler; Human Relics from Drift in Ohio, by Prof. E. W. Claypole. On Wednesday, Indian Wampum Records, by Horatio Hale; Seri Stone Art, by W. J. McGee; Onondaga Games, by W. M. Beauchamp; The Name Manhattan, by William Wallace Tooker; Kootenay Indian Names, by A. F. Chamberlain; Aboriginal Occupation of New York, by W. M. Beauchamp; Clan System of the Pueblos, by F. W. Hodge; The Psychic Source of Myths, by Dr. D. G. Brinton; The Limitation of the Comparative Method, by Franz Boaz. On Thursday, papers on Certain Shamanistic Ceremonies Among the Ojibwas, was by Harlan I. Smith; Recent Discoveries of Pigmy Races, by R. G. Haliburton; The Theological Development of One Child, by Fanny D. Bergan; The Beginning of Zoo Culture, by W. J. McGee. On Friday a number of papers were presented, including Finland Vapor Baths, by W. H. Smith; The Temple of Tepoztland, Mexico, by M. H. Saville (not present); The Preservation of Local Archæology Evidence, by Harlan I. Smith; Results of Recent Cave Exploration in the Eastern United States, by Henry C. Mercer (not present); Cupped Stones, by Franz Boas; Pueblo Indian Clans, by F. W. Hodge (not present); Mescal Plant and Rite, by James Mooney (not present), and Recent Explorations in Honduras by the Peabody Museum, by F. W. Putnam. The last mentioned communication was a clear exposition of the results of researches concerning the prehistoric works of Honduras, which have been found of remarkable extent and archæologic interest; in some cases three classes of ruins representing different periods and culture stages are superimposed; and the architectural and decorative features, and the inscriptions and modeling, have been found to throw much light on the development of that partial civilization indigenous to America which has attracted all the students of Peru, Central America, Yucatan and Mexico. The paper was discussed at length. A few papers were, in the absence of the authors, presented by title only.

The meetings of Section H were highly gratifying in the number and excellent quality of the papers presented; it was the expressed opinion of several leading anthropologists present that, so far as the science of man is concerned, the Buffalo meeting was never excelled and seldom equalled.

BOOK REVIEWS.

Pre-Historic Man of the Stone Age on the Banks of Lake Ladoga. By A. Inostranzeff, Russia ; 40., 246 pp., 122 cuts, 2 lithographic and 17 phototype plates : St. Petersburg. Summarized chiefly from the October No. (1892) of *L'Anthropologic*, by O. W. Collett, of the Missouri Historical Society, St. Louis.

The chapters of Mr. Inostranzeff's work comprise the geology of the south side of Lake Ladoga ; the fauna and flora thereabouts of the Stone Age ; the objects of human workmanship discovered, and such account of the pre-historic men who fashioned them as the discoveries seemed to warrant,

The flat, sandy character of the shore is described, and the two terraces of the lake corresponding with the two levels of the water,— the first very ancient. Excavations for the Sias and Svir canals, and other works of a like kind thereabouts, opened up to inspection the lower soil. A bed of alluvial and forest peat was exposed, containing numerous trunks of trees, and also a quantity of worked objects, which witnessed to man's presence contemporaneously with the most ancient shore.

After giving an account of the flora discovered in the course of exploration, mentioning, incidentally, that in excavating for the new dock at Cronstadt a barque was unearthed, formed from a single oak tree, and enumerating the several classes of the fauna, the author proceeds to conclude that all the facts concur to show that the men whose traces were revealed dwelt on the shores of a great inland sea, that they were hunters and fishermen — probably the latter chiefly — and sedentary. It does not appear that agriculture was practiced, or that there were domestic animals except one of the dog species, of such size that it could be utilized as a beast of burden.

Human remains were found distributed here and there, the skulls of the women differing so much from those of the men that one might readily take them to be of a different tribe.

Excellent cuts and phototypes illustrate this part of the work.

The handicraft of these ancient lakemen is especially noteworthy. They chipped stone, as is evidenced by the quantity of flakes and formless fragments collected ; but of finished pieces, only some scrapers and, rarer still, arrow points of a definite type were found. On the other hand, polished stone is plentiful, characteristic and of very varied forms. It comprises little short chisels, narrow, sides parallel and flat ; axes, ordinary and large, the edges, in most instances, beveled, showing that these implements were utilized hafted as adzes. There are also quite small gouges with deep throats. Some of these implements are double bitted.

The author enters into much detail on the variety of stones used, the sources from which they were obtained, and the processes of manufacture.

Tools of bone are far more numerous and varied than the implements of stone. There is a collection of polishers, or spatulæ, chisels to cut direct or sideways, one and the other sharpened in all manner of ways, and the surfaces either partly or entirely finished. Some splinters, slender and regularly polished, with a hole at one end, seem to have been used as awls and netting needles. There are also pieces much like the crochet needles of to-day, and others which may have served to suspend things ; also, true barbed points are not absent, nor harpoons with one or several barbs.

All these objects of bone, in general, have a characteristic appearance, and are easily distinguished from parallel series of other countries.

There is another class made of the same material which, as near as one can determine, may be grouped as belonging to dress—as amulets and fetishes. The collection also contains perforated teeth, about the same as are found anywhere, converted into pendants, and pieces of stone and bone with holes drilled through them, common things or ornaments as one may prefer.

Some bone objects ornamented in a manner special to themselves, are of undeterminable use. Are they arms? Some have a hole for suspension, with rows of indentations or notches. Are these *birki* sticks of correspondence?

Pottery fragments are numerous, and many ornamented either with designs formed with a pointed instrument, or by pressing something against the clay to produce a pattern in relief. The men of the Stone Age in Russia appeared to have excelled in this sort of ornamentation.

The author thinks that the people who dwelt on the shores of Lake Ladoga were the primitive race of Northern Russia.

Mr. Inostranzeff's work, so full of interest to students in pre-historic archaeology, unfortunately, is a sealed book, at least to our western world,—it is written in Russian.

Introduction to the Study of Latin Inscriptions. By James C. Egbert, Jr., Ph. D., New York, Cincinnati, Chicago. Published by American Book Company. 1896.

This book is a marvel of printing, and shows the great advance that has been made in the art of illustrating as well as printing. It opens with two plates of the different alphabets, Phœnician, Greek, Etruscan, Umbrian, Oscan, Latin, Faliscan, and in other plates illustrates (1) the alphabet of the Republic, (2) of the Empire. (3) the Cursive alphabet of Pompeii and of Iacia. It also presents in the first chapter a large number of inscriptions, which date from the fifth century A. U. C. to 200 A. D. These show the progress in the art of writing and inscribing capital letters.

The names and titles of emperors and the chronological list follows in the fifth chapter. The official titles, inscriptions of the Senatorial, and Equestrian Order appear in the sixth chapter. The inscriptions, which are dedicatory, sepulchral, honorary, are described in the seventh chapter. These inscriptions are found on movable objects, public parks, aqueducts, roads, bridges, mile-stones and boundary stones.

The eighth chapter treats of documents, such as decrees of the senate and of magistrates, military diplomas, public and sacred acts, *acta triumphorum*, documents relating to the consecration of temples, to the army, to the *collegia principality*, epitaphs, wall inscriptions, war tablets, private documents.

The last chapter treats of the restoration of defective inscriptions and the dating of inscriptions, which are very important subjects. It also contains tables of abbreviations. The book is exceedingly valuable to the classic student, and especially the one who is interested in Latin literature and archaeology. It does not carry the subject as far back as could be wished, for there are other inscriptions given in other languages, Greek, Hebrew, Phœnician, Chaldean, which antedate these Latin inscriptions,

and most archæologists are anxious to go back to these earlier times, still this is more useful to the specialist in Latin in that it is confined to one language. If the same art of reproducing, and of printing goes on we shall hope that the larger field will be entered and that the books will be within the reach of ordinary archæologists whose means are limited, which shall bring before the eye the older alphabets and the older records.

The book is bound in Turkey morocco and cloth. It is designed for permanent use. Scholars owe a debt of gratitude to the publishers for all these reasons.

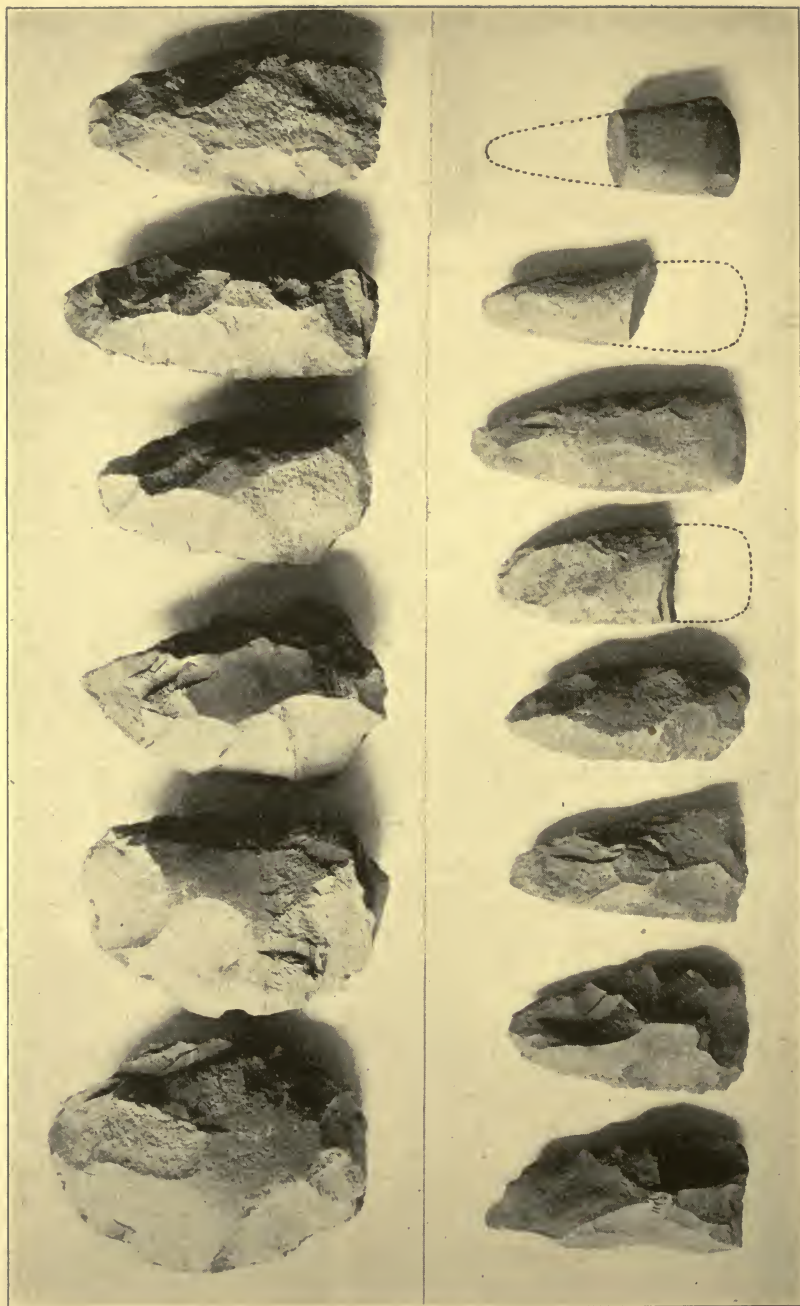
Bible Chronology Carefully Unfolded. By Rev. Smith B. Goodenow, A. M. Fleming H. Revell Company, Chicago. 1896.

This is a strange book, and yet one that has considerable value. The author begins with the story of his conversion under President Finney, and his early devotion to Bible study, and seems to claim that this is a guarantee of the correctness of conclusions as to Bible chronology, a claim which the archæologist would be the last to acknowledge, especially when it is attended with the assertion that the discoveries which have been made are of no value whatever, when tested by the system which has been established by himself.

It differs from Usher's Chronology in only a few particulars. He ascribes 580 years instead of 480 to the period between Solomon's Temple and the exodus, and carries back the date of the exodus to 1591 instead of 1491. The anti-scriptural theory of the Egyptologists put the date down as far as 1300 B. C. The discovery which led the archæologist to place the date of the exodus so late was the one which brought to light the tablets of Tel-el-Amarna. The later discovery, the one that gives the name of YSRAAL sets the date back to the earlier period of 1491, or thereabouts, and makes the Ahmenotep, instead of Meneptah to be the Pharaoh of the exodus.

The value of this book consists in the collection of the evidence gathered from history of the early fathers and ancient writers, which may be cited in support of Usher's Chronology with the addition of certain astronomical calculations which may fix the exact day of the crucifixion of Christ. The book has cost a great deal of labor, and may be taken as a good summary of the old arguments.





EVOLUTION OF A CELT

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MANUFACTURE OF PECKED-ABRADED STONE IMPLEMENTS—A STUDY OF THE REJECTAGE.

BY WILLIAM H. HOLMES.

Stone implements are usually classed in the broadest way as "chipped" and "polished," and these terms have been used to designate the two grand divisions of the stone age. The term chipped, as applied to the first class, is entirely satisfactory, as the characterization is complete, but the term polished is less appropriate for the second as the objects designated are not shaped by the polishing process and are often but slightly or not at all polished. The shaping is accomplished by other more dynamic processes such as flaking, pecking, cutting, grinding, sawing and drilling. All things considered, the pecking operations are the most important in the shaping of so-called polished implements, and I have thus used the term pecked-abraded implements as being more fully expressive of the characteristics of the group.

The technic history of chipped implements is comparatively simple and may be studied through the finished objects, by observation of the operations in practice, or by examination of the refuse of ancient manufacturing sites. The technic history of the class called *polished* is necessarily complex and obscure as the implements pass, generally, through various stages involving two or more processes. The difficulty of study is increased by the circumstance that when the finishing processes are complete, traces of the earlier stages of the shaping work are obliterated; but nevertheless the varied primitive methods are being gradually revealed and removed from the rapidly diminishing list of "lost arts." This is being brought about largely by a study of sites of manufacture where the rejectage, as in the chipping art, records the various operations with accuracy if not with fulness. My extended studies in the ancient flint quarries of the country have thrown light on many obscure points in the manufacture of chipped implements, and the results are being published; and now the phenomena of pecked-polished work-shops are receiving necessary attention.

The Potomac Valley furnishes much evidence on the practice of this branch of the stone shaping arts. Many ancient sites yield artificially modified water-worn rocks—boulders and pebbles of hard and tenacious materials—cast away at all stages of the shaping operations from the first traces of pecking, where the work of removing an objectionable lobe or projection was just begun, to the stage where the traces of natural contour are all but obliterated. There are also specimens that have passed into the wholly artificial state, into symmetric and perfected tools, as well as others that have been modified by use, reshaped, reused, and practically worn out. We likewise observe various worked stones of tough and hard varieties in which the pecking has been preceded by flaking. In some cases the whole surface has been flaked over, and in other cases projecting portions only have been removed. Examples are found in which the pecking process which followed has been merely commenced, and others on which the work has gone so far that only the deeper flaked conchoids are traceable. Of course many wholly artificial and highly finished articles have passed through this series of operations, preserving in themselves no record of their earlier morphology.

The variety of stone most used for the manufacture of celts and axes is a compact, greenish-gray trap or trap-like rock derived originally from the highlands of Maryland and Virginia, but obtained by the aborigines very largely from the boulder beds of the tidewater rivers near their exit from the highland or at other points higher up the streams where partly rounded fragments had been deposited in large numbers. A great deal of shaping was done on the various village-sites about the Little falls of the Potomac and on other streams at the crossing of the fall line.

The most striking example of this class of site yet observed is located in Page county, Virginia, $2\frac{1}{2}$ miles east of Luray. It occupies several acres of bottom land on the eastern side of Pass creek, a few hundred yards above its confluence with Hawksbill creek. The only notable topographic feature of the site is a mound some 3 feet high and 200 feet in diameter, in which Mr. Fowke found human remains in almost incredible numbers, besides occasional implements and utensils deposited with the dead. There are many graves scattered over the terrace, a row of eight, each containing decayed human bones, together with implements and earthenware, having been freshly disturbed by the plow at the time of my visit. The materials utilized in implement making by the inhabitants were derived from great accumulations of pebbles, boulders, and partly water-worn fragments of rock occurring in the banks and bed of the stream and now exposed where the floods have torn channels through the alluvial bottom; and probably also from deposits of similar but rather coarser materials outcropping in the face of a terrace which rises to a considerable height from the eastern margin of the narrow bottom. On the village-site

about the mound the phenomena of manufacture are more or less confused with those of utilization, but separation of the varied features is in the main possible and easy. The evidence of manufacture consists of large quantities of rejectage, comprising broken masses of stone, tested boulders and rejects of all stages of development, together with flakes and hammer-stones. The phenomena of dwelling are arrowpoints and spear-heads, drills, worn celts and axes, pitted stones, mortars, pestles and pottery.

Two principal materials were utilized and two distinct classes of implements were made, leaving equally distinct varieties of rejectage. Quartzite was utilized in making the ordinary flaked tools, mostly projectile points, and the ground is filled with turtlebacks, flakes, and broken blades of this material, duplicating the rejectage of the well-known tidewater sites. The greenish gray trap or trap-like rock was employed in the manufacture of battered-abraded tools, mostly celts, and the flat ground about the mound and extending from the stream back to the base of the terrace is strewn with the rejectage. This stone occurs in boulders and irregularly water-worn masses in the banks of the stream and scattered over the floodplain, but not to any extent in the higher terraces which represent the Lafayette period. It was assumed, therefore, that the implement-rock had a local origin somewhere within the drainage of Pass creek. Mr. W. J. McGee, who accompanied me to the spot, undertook to trace the material to its source and met with almost immediate success. Observing that the particular variety of stone did not occur to any notable extent in the beds of neighboring streams, he followed Pass creek to the forks, and there found it confined mainly to the bed of the middle fork. Ascending this, he soon encountered a body of intrusive rock, a dark crystalline diabase, the finer portions of which (possibly a sedimentary slate or shale altered by contact with the intruded mass) had been used by the Indians. It appears that the spot occupied by the village was probably the only spot to be found on which this stone could be obtained in forms well suited to the needs of the implement maker, and at the same time in sufficient quantity to make extensive manufacture possible. It is not improbable that the village came to be located here as a result of the discovery of these conditions.

It was found that in nearly all cases the work of shaping by the battering-abrading processes was preceded by flaking the rounded masses into approximate shape. Rejects representing all stages of the work of flaking, pecking and grinding are found in numbers. There is the boulder or mass with a few flakes removed in testing, or the shattered fragments resulting from breakage under the preliminary testing or shaping blows; there are hundreds of rejects representing early stages of manipulation, the thick turtleback forms duplicating in general appearance the corresponding rejectage of projectile-point making; there are the approximate blade-like forms but rarely

approaching thinness; there are many pieces broken under the flaking hammer at all stages of the work; there are also many specimens in which the pecking has merely begun, and others more advanced, and these stages are represented by much breakage under the pecking hammer; finally there are the completed implements with ground edges and surfaces, in which the pecking and grinding has to a large degree obliterated the conchoids of flaking.

The objects assembled in two lines in the accompanying plate are intended to illustrate the shaped forms found on the celt or hatchet-making site. Beginning with the rudest form, *a*, we advance through a progressive series of stages of elaboration to *n*, which is the fragment of a highly finished celt. The larger number of these objects are undoubtedly rejects thrown aside on account of some eccentricity of fracture—usually quite apparent; *a* is of coarse grained stone and the flakes did not carry; *b* is finer grained but the upper end was broken away, while the body remained excessively thick; *c* is very thick toward the lower end, which should have been thin, and thin and weak above where it should have been round; *d* and *e* appear to be well outlined save that the bodies are very thick, especially toward the broad end or edge, and an excessive amount of pecking would have been called for to reduce them to the desired form; *f* is apparently not so defective in shape as in material; *g*, *h* and *i* are so meagre in parts and so eccentric in shape that pecking could not be carried out to advantage; *j* is excessively thick though otherwise apparently well formed, and pecking operations had begun along the higher ridges between the conchoids, as seen in the engraving; *k*, which is considerably pecked, was broken, probably under the pecking hammer, though possibly in use; *l* is well pecked over most of the surface and the edge has been ground. This specimen has probably seen use and is certainly not a reject; *m* and *n* are fragments of well finished pieces broken under the pecking hammer, or in use. It is an interesting fact that the better finished objects are represented so largely by halves or fragments, the result of breaking or shattering, and it is especially noteworthy that the breakage is such as would occur from strokes of the pecking hammer rather than from any ordinary use, the fractures in many cases being at right angles to the shaft or approximately so. Many of these broken specimens come within the slightly pecked stage. The objects here illustrated were selected from a large number covering the same general range of form. Upwards of two barrels were gathered and forwarded to the Bureau of Ethnology for examination. The story they tell is well epitomized in the plate. Many hammerstones of the usual types used in flaking and pecking were found on the site.

Although the celt is ordinarily classed with pecked and polished implements, it is readily seen that on this site flaking was of greatest importance as the main difficulties were en-

countered, the chief shaping work accomplished, within the flaking stage. The pecking removed excrescences and added to symmetry, and grinding reduced the edge to an even curve and uniform bevel.

Grooved axes were also made on this site but to a lesser extent, the operations being well represented, however, in the rejectage. They were roughed-out by flaking pretty much as were the celts, rude notches being broken in the sides as the only possible contribution of the flaking process to the groove making.

It will be seen that rejects of the celt shop, up to the point where the pecking began, are of decidedly paleolithic type—that is to say they present no features that might not fitly characterize the simplest stages of stone shaping, and it is equally apparent that there is nothing in their appearance that would indicate their connection with the pecked-polished stone period. As clearly demonstrated by the phenomena of this site celt making, wherever carried on at all extensively, must have given rise to these forms in very considerable numbers.

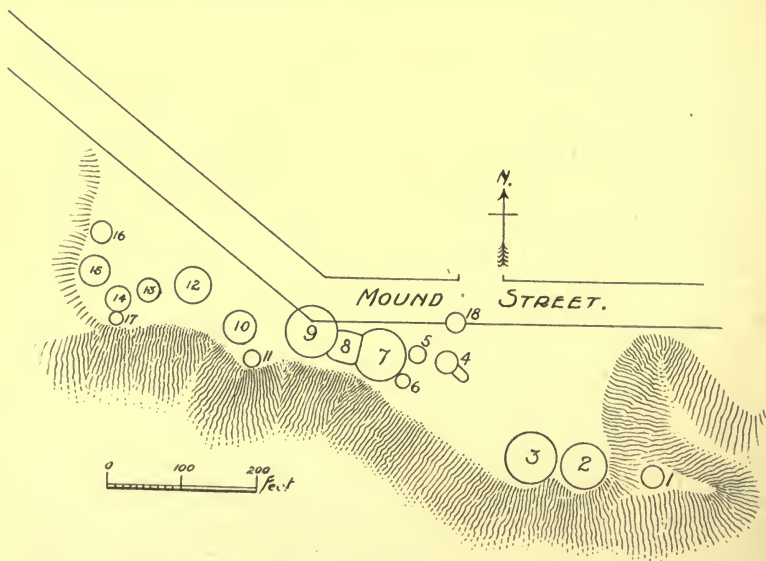
A comparison of the rejected forms produced in celt making as practiced in such shops as that of Pass creek with corresponding forms from the flaked-blade shops such as those of Piny branch will prove instructive. In general appearance the rejects of the two sites are very much alike. At a glance we see that the form constantly kept in view in both cases is leaf-like outline, one end being decidedly narrow and pointed and the other broad and abruptly terminated. We observe, however, that in the flaked group—the leaf-shape group proper—the *pointed* end was designed to be finished for use, and that in the group shaped by flaking, pecking and grinding—the celt group—the *broad* end was designed to form the edge of the implement, and this distinction can be traced in the rejectage back toward the inception stage by the difference in degree of attention given the two ends. In the one case the narrow end was to be specialized for use, and the broad end for hafting; in the other, the broad end was to be specialized for use, and the narrow end for holding or hafting. In general, we may say that rejectage in the one class was the result of too great thickness, and that in the other class the result of too great thinness.

It is thus further seen that there are two well marked types of rejected forms, equally primitive or paleolithic in type and equally liable to be collected and classed as finished implements. It would be a matter of no little interest to learn to what category or categories these two distinct classes of rejects have been assigned by archeologists in the many countries in which the two classes of implements were made and used.

MOUNDS AND STONE CISTS AT ST. PAUL, MINNESOTA.

By T. H. LEWIS.

Soon after my arrival in St. Paul, in 1878, the mound and village sites were looked up, and a determination made to thoroughly explore them, but, with the exception of one group, but little was done, owing to the fact that the owners of the land generally were inclined to believe that they possessed in them a rare treasure, and even in the case of the upper group on Dayton's Bluff which was being demolished in order to

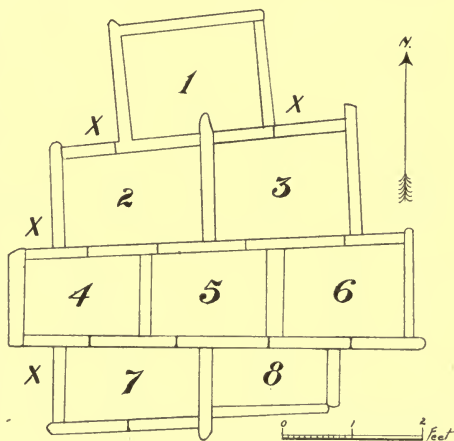


GROUP OF MOUNDS AT DAYTONS BLUFF

strip the ledge for quarrying purposes, only one of the owners—Mr. Patrick Kelley—was liberal minded enough to grant the necessary permission to make the excavations. Besides a personal survey of all the groups, the following is a concise statement of the exploration of the mounds themselves so far as the work has extended.

On the 12th of June, 1879, in company with Mr. William H. Gross, an excavation was made in Mound No. 7 of the group located at the lower end of Dayton's Bluff. We found it to be 70 feet in diameter, 12 feet in height, and composed of clay,

loam and sand more or less intermixed, but no stratification was evident until the base was reached. Near the center, at the depth of seven feet, was a well-preserved bone implement, which had been rudely sharpened at one end as if intended to be used as an awl or perforator. From this point, and extending downward, was a round stake of about three inches in diameter, a little over two feet in length, and somewhat sharpened at the lower end, but so much decayed that it fell to pieces on being removed. At the depth of eleven and one-half feet were five pieces of wood which were about eight feet in length, and lying parallel with each other on a nearly north and south line. The central piece, and the piece on each side of it, were about seven inches in diameter and about two feet apart, from center to center; and the two outside pieces were about five inches in diameter with a space of about fourteen inches between them and the pieces inside. The top of the central piece was somewhat flattened — naturally — and on it were seven boulders which were from six to ten inches in diameter. These pieces of wood rested upon a thin stratum of black loam some two inches in thickness, in which, beneath the central piece, were some decayed human bones, of which only one section of the vertebræ and a part of a humerus were well preserved.



STONE CISTS AT DAYTONS BLUFF

Beneath the north end of the piece on the east side was the major portion of a human skull, on top of which was a right femur, both of which were remarkably well preserved—having the appearance of not having been in the ground very many years, but doubtless this was owing to the fact that but little if any moisture could penetrate to this point. Below the loam was a stratum of charcoal and ashes from one to two inches in depth, and beneath the latter a stratum of yellow clay five inches in depth, packed very hard and showing evidence of heat. Beneath this hearth—if the name is applicable—was a six inch stratum of loose, yellow, sandy clay, containing a few pieces of broken pottery composed of shell and clay, some small fragments of human bones and a few teeth.

No further work was done on this group until August 14th, 1882, on which date—with the necessary assistance—an excavation was made in Mound No. 3, which was 60 feet in diame-

ter and ten feet in height. Near the center, at the depth of three feet four inches, was a decayed skull, and directly beneath it some ten inches was a second skull and a piece of partially decayed oak wood nearly two feet in length and five inches in diameter. On the same level, five feet eight inches east of the center, were four decayed skulls all crushed together. About one foot further to the east of these was the seventh skull, which proved to be a rare find, indeed I know of nothing similar ever having been found in the mounds or ancient graves. The facial bones of the skull in question had been covered with red clay, thus producing an image of the original face. Unfortunately the pressure of the earth around it had forced it somewhat to one side and out of shape, and a small portion of the clay covering the lower jaw fell to pieces, thus exposing the bone and teeth. Apparently the back and top of the skull is wanting, but from general appearances this portion has been pushed inward. From the size of the skull and the teeth, it is evident that it belonged to a child of about five years of age. This specimen was immediately photographed, and is now in as good condition as when first taken from the mound.

On the same level, two feet south of the center, was a calcined skull all in fragments, and fifteen inches south of west from the latter were portions of a skull and some fragments of human bones which were likewise in a calcined condition. Near the center, and at a depth of seven feet seven inches, were two large boulders, and beneath them were some broken human bones which had been gnawed by some animal—probably a wolf. In various sections of the mound isolated human bones and many muscle shells were found. The excavation was carried down to the depth of eleven feet, but nothing else of interest was found. In constructing the mound, there was evidently an attempt at stratification, but the lines were not well defined, so that measurements were made.

The next day, August 13th, an excavation was made in No. 10, which was 46 feet in diameter and 8 feet in height. At the depth of four feet two inches, and three feet southeast of the center, a decayed human skull and two small arrowheads were found. On the same level, three feet three inches nearly southwest of the center, was another decayed skull and three sections of vertebræ. At seven and one-half feet was a stratum of charcoal and ashes two and one-half inches in depth. Scattered through the mound were many muscle shells.

On the same day an excavation was made in No. 13, which was 30 feet in diameter and 4 feet in height. At a depth of twenty inches, and near the center, were six large boulders—one in the center and five surrounding it. Under the central boulder was a badly decayed skull, but no other bones. At a depth of three feet, and four feet a little west of south of the center, was a second skull—face upwards, and beneath it were the leg and arm bones only. At a depth of four feet three inches, and four feet southwest of the center, were the badly

decayed remains of two skeletons with their heads to the eastward and evidently facing each other.

On August 16th, No. 15 was excavated. It was forty feet in diameter and four and one-half feet in height. At a depth of three feet eight inches, and about four feet nearly north of the center, was a decomposed skull. At the base near the center, an excavation or pit five feet in diameter extended down into the gravel to the depth of two and one-half feet. In the bottom of the pit were some badly decayed human bones—evidently parts of three skeletons, a number of muscle shells and one small arrowhead. The pit—above the bones—was filled with fine, clean river sand. Scattered through the mound were over 100 muscle shells of various kinds and sizes.

On August 17th No. 12 was excavated. It was 51 feet in diameter and eight and one-half feet in height. Nothing of interest was found until a depth of nine feet was reached, at which point was unearthed the top of a conical heap of boulders and flat pieces of limestone intermingled, the center of which was a little west of the center of the mound. The heap being entirely uncovered measured nine feet in diameter and nearly two feet in height. Beginning at the apex, all the stones were carefully removed, and it was found that they rested upon an apparent floor of flat pieces of limestone some two and one-half inches in thickness and of irregular outline. The excavation was thoroughly cleaned out, and on removing the stone floor it was found to be a covering for eight apartments or cists, which were about seven inches in depth, and were formed by placing flat pieces of limestone, which were from two to two and one-half inches in thickness, on edge. Within each cist were human bones, but in no instance was there a complete skeleton. Human bones were also placed in the angles (marked + in the diagram), and were covered over with pieces of flat limestone. The cists were somewhat irregular in length and width, so that the dimensions are not here given, but the diagram shows these irregularities, at the same time giving their exact shape as near as it is possible to do so. All of them were filled with black loam, and the bones, relics, etc., were lying on the bottom, which was the natural gravel of the bluff.

Besides the bones, Cist No. 1 contained two muscle shells and one arrowhead; No. 2, twelve muscle shells; No. 3, five muscle shells; No. 4, fourteen muscle shells; No. 5, a perforated bear's tooth, a small piece of lead ore, and a small piece of red clay of irregular shape; No. 6, two muscle shells, a small copper ornament, oval in outline, flat on one side and convex on the other, with a small hole on each end for inserting a string. It is made of a thin sheet of hammered copper, the edges of which were notched in order to fit around a wooden pattern of oval shape; No. 7 contained five muscle shells and three arrowheads; and No. 8, three muscle shells and nine arrowheads.

The bones were all in fine condition, but had been gnawed

by some wild animal. With each lot of bones were pieces of skull, which had also been gnawed, and in each case (four only) where there was a lower jaw, it was placed at the opposite side from the pieces of skull.

On the east side of the rock heap, and on a level with the top surface of the cist covers, and extending nearly north and south, was a ridge of fine, yellow, sandy clay, seven feet in length, two feet in width, and about one foot in height, which had slightly flattened ends—looking in outline somewhat like a double-bladed paddle, but just why this was constructed was not evident. The first three feet of the top of the mound was a highly-colored sandy clay; the next three feet, black loam, and beneath the latter, clay, sand, and loam intermixed.

On August 18th, No. 1, which was 23 feet in diameter, and 2 feet in height, was excavated, and at the depth of three feet were a few decayed human bones in a small heap—evidently parts of three skeletons—covered with eleven large muscle shells.

No. 4, which was 28 feet in diameter and two and one-half feet in height, was opened, and on the natural surface was a decayed human skull and traces of other bones. The skull was in an upright position, facing the north, and resting upon the top of it were two large muscle shells. The approach or graded way, which extended outward from the base of the mound 20 feet, was 16 feet in width and 2 feet in height. In it at the depth of fifteen inches was a decayed human skeleton, with the skull toward the center of the mound, and a few muscle shells mixed with the bones.

No. 6, which was 18 feet in diameter and 1 foot in height, was next opened. At the center, at a depth of fourteen inches, was a lower jaw, the end of a left humerus, an arrowhead, a rude, chipped implement, and a large muscle shell.

In No. 11, which was 20 feet in diameter and one and one-half feet in height, at the depth of two and one-half feet, were a few decayed human bones, evidently the remains of one skeleton, and two muscle shells.

On June 12th, 1883, Mound No. 16, which was 28 feet in diameter and one and one-half feet in height, was excavated. At a depth of two feet, in a two-inch stratum of black loam, were portions of three skeletons, one of which was that of a child about six years of age. All of the bones were piled in a rather promiscuous way without any apparent order. On the western side of the bone heap were nineteen round water-worn stones about the size of a walnut, and opposite to them was about one bushel of river gravel. With the bones was a small chipped implement of rude workmanship.

On the same day, No. 14, which was 36 feet in diameter and 5 feet in height, was excavated, and near the center, at the depth of five feet three inches, were the remains of five skeletons, and with them one arrowhead, five spoons made from muscle shells, and seventeen large muscle shells,

MOUNDS AND STONE CISTS.

No. 17, which was 20 feet in diameter and one and one-half feet in height, was next opened. At the center, at a depth of two feet, was a lower jaw, a few fragments of bone, nine muscle shells and one arrowhead, which were covered by five thin pieces of limestone.

The group of mounds located on the terrace at the junction of Bertha and Isabel streets, in West St. Paul — now the Sixth Ward — in Blocks 39 and 48, consisted of one elliptical and twenty-one round mounds. On July 2d, 1880, Mounds Nos. 11 and 16 were excavated, but nothing of interest was found. 15, which was 22 feet in diameter and 2 feet in height, was also opened, and near the center, at a depth of two and one-half feet, were some badly decayed human bones, and with them were a few chert and quartz spalls, and several fragments of pottery, composed of broken stone and clay, and shell and clay.

On October 31st, 1881, Mound No. 11, of the upper group on Dayton's Bluff, was excavated. It was elliptical in shape, 33 feet in length, 25 feet in width, and 20 inches in height. At a depth of twenty-two inches, and extending along the center of the mound for about six and one-half feet, were a number of decayed human bones, portions of six skeletons, and intermingled more or less charcoal and ashes. This is the only mound within the city limits that was distinctly stratified. The first or top stratum consisted of five and one-half inches of black loam; the second, eight inches of yellow clay; the third, about two inches of sand and gravel; and the fourth, four and one-half inches of black loam. The natural surface to the depth of about two and one-half inches, and covering a space ten feet in length and five feet in width, had been removed and then refilled with loam, human bones, etc.

No. 12, which was 28 feet in diameter and two and one-half feet in height, was also excavated, and at the depth of two feet nine inches were the badly decayed portions of four skeletons, all in a conglomerate mass, and with them were a few small fragments of plain pottery composed of shells and clay.

No. 14, which was 28 feet in diameter and two and one-half feet in height, was next examined, and near the center, at a depth of two feet two inches, were parts of two skeletons. On the same level, five feet west of the center, were parts of two skeletons, and portions of three skulls.

The next day, November 1st, No. 10, which was 20 feet in diameter and one and one-half feet in height, was excavated. At a depth of two feet five inches, and four feet five inches southwest from the center, was a granite boulder, averaging about 20 inches in diameter, on the top of which was a small vessel composed of broken stone and clay. On the east side of the boulder, and in contact with it, were the remains of two skeletons which were badly decayed. The skeletons were on a level about two feet below the top of the mound.

On August 18th, 1882, No. 1, which was 24 feet in diameter

and 1 foot in height, was excavated. At the depth of one foot were some pieces of decayed wood resting upon a thin bed of charcoal and ashes. At the depth of two feet three inches were the decayed portions of four skeletons, together with several muscle shells.

In No. 2, which was 22 feet in diameter and 1 foot in height, at the depth of thirteen inches were several short pieces of decayed oak wood, resting upon a thin bed of ashes, and at two and one-half feet were portions of three skeletons. Among the bones were 27 muscle shells, and some small fragments of pottery composed of shell and clay.

On the same day No. 13, which was 44 feet in diameter and 5 feet in height, was excavated. At the depth of two feet, and five feet northwest of the center, were portions of a skeleton, one muscle shell, one small arrowhead, and a piece of pottery composed of broken stone and clay. On the same level, two feet northeast of the center, were some fragments of human bones, including the skull, and a small chipped implement. At three feet ten inches, and three feet seven inches southwest of the center, was a skull, and on the same level, about four feet east of the center, was another, which had been placed in an upright position, and rested upon four large muscle shells. Scattered over this level were a few sections of vertebræ, ribs, etc., but no two were together.

It will be noted that the form of burial was somewhat similar in all the mounds of both groups, with the exception of the one containing the stone graves, and in the latter case the question arises, Does the theory advanced by Dr. Cyrus Thomas, that the stone graves were built by the Shawnee Indians and cognate tribes apply to these also? This form of burial is by no means rare, and yet they are not very numerous as compared to the large number of mounds found in this region. First, there are boxes with all the sidea made of stone slabs; second, those with two sides, and the top of slabs and the ends of boulders; third, those walled up with boulders, or pieces of limestone, and covered with a slab; and fourth, those built of builders in the shape of a beehive. The latter form is found as far to the northwest as the south end of Lake Traverse, and a similar form is reported from the vicinity of Jamestown, North Dakota.

ST. PAUL, MINN, August 25. 1896.

REMARKABLE DISCOVERY OF THE RUINS OF A PREHISTORIC CITY IN MEXICO.

AN EXTRACT FROM MEXICO.

A discovery of great archaeological value and importance has recently been made by Mr. Wm. Niven, a well-known mineralogist of New York City.

Mr. Niven is a life member of the American Museum of Natural History and owner of the Rose Garnet quarries near Cuautla, Morelos. While on a prospecting tour in 1894 for Mr. Morris K. Jesup, president of the American Museum of Natural History, through the state of Guerrero, he found ruins of what appeared to be a great and unknown prehistoric city, in the mountains northwest of Chilpancingo, capital of the state.

Mr. Niven has just returned from a trip through that region and has over 300 photographs of the most interesting localities. The ruins are more numerous than he had first supposed and extend for over an area of ten leagues square, or 900 square miles, he found in every foot-hill and mountain ridge the remains of houses and great buildings. In most instances these prehistoric structures were little more than foundations, but many of the walls are standing from three to eight feet high and all substantially built of stone and lime.

Mr. Niven, during the trip visited the ruins of twenty-two temples occupying a space averaging 600 square feet each, with altars in the center of all of them from five to twenty feet high and from ten to fifteen feet square.

At Quechomictlipan, (the name being Aztec for "a quantity of bones on top") he found that the building stone, in some of the edifices had been carefully cut of equal dimensions; and while excavating in one of these a great quantity of bones of animals were secured. This proved to be a circular chamber, or tower, about 12 feet in diameter, which was filled with dust and broken plaster painted a brilliant red and white. On the floor, which was also of plaster, there were large quantities of stone beads and many very curious and interesting objects with a great abundance of broken pottery, metals, etc.

Excavations at Jabalin revealed plastered walls and a great quantity of broken pottery. Near the great barranca of Xilatlalco, over fifteen hundred feet deep, the altar of one of the temples was over twenty feet high and eighteen feet square.

The walls of the temple at Yerba Buena are in some places eight feet high, and the altar is twelve feet high with parts of the stairs still remaining. Here were also found many objects of terra cotta.

Photographs were made of a stone in hieroglyphics a short distance from Xoquiapan and on the top of a hill were the ruins of a temple with the usual altar in the center.

At Organos the ruins were almost entirely under ground. An excavation was made into one, and at ten feet the foundation of the walls was not reached. Three chambers were partly cleared out and they were found to be filled with clay, ashes and broken pottery. Another temple was found near here at a place called Tejas and more subterranean dwellings.

One large cut stone at Xochocolzin, seven feet long by two feet wide, had a figure of an idol carved on one side—with head-dress all complete. About eight hundred yards west on the summit of the hill were two large idols, one weighing about five hundred pounds.

At Texcal the buildings were all under ground, and near the roof of one of them twelve prepared stones of the shape and size of a sugar loaf were built into the walls, placed side by side with their broad ends projecting. Here, as well as in many other localities, were found circular stones which looked like grindstones but which might have been used as caps for pillars. On the summit of the Cerro Portrerio, as well as at Chalchintepetl, there are what appear to be great pyramids over sixty feet high. At both places some digging was done and many interesting and unique objects were found.

Perhaps the most remarkable find was made at a place called Guaybo. Here were the ruins of a temple 600 feet by 200 feet. At the depth of nine feet from the surface, under the altar, an olla of terra-cotta was discovered filled with dirt, secreted in which were seventy-two beautiful objects of mother of pearl. Four of them were carved heads with a peculiarly shaped head-dress and the others were carved representations of fish, etc. The olla was broken by the pick of the peon but the fragments were carefully collected and one-half of it with the earth and objects sticking to it undisturbed, was secured.

To reach the ruined city Mr. Niven passed over the route of the new railroad to Accapulco, now in course of construction, and both going and coming he was kindly entertained at the different camps. At Buena Vista he met a fellow Scotsman, the well-known general contractor, Col. Dave Shaw, and this meeting, Mr. Niven reports, was one of the most pleasant reminiscences of the trip.

THE GARDEN BEDS OF MICHIGAN MODELED.

BY H. E. OAKES.

In 1892, with the co-operation of the Detroit branch of the Archæological Institute of America, the University of Michigan was enabled to take up the investigation of the so-called "garden beds" of the State. At that time photographs were taken of the surface, and two careful surveys, by experts, were made of the earthworks on the land of Mr. Charles Price, near Oshtemo, Kalamazoo County. From the data thus obtained, a contour map was made of a set of these earthworks, which were well preserved and protected by the natural timber.

From the maps, photographs and other data, an exact model of these works was constructed for the Museum of the University of Michigan. This model was made by Mr. William Orchard, of Astoria, L. I., New York, under the direction of Harlan I. Smith, who was in charge of the explorations.

The particular "beds," now modeled for the first time, are about thirty feet long by twelve feet high, and rounded up to a height of one foot. A cross section in the model gives an idea of the stratification, which simply shows the accumulation of leaf mold in the hollows and the washing away of the tops of the ridges.

The horizontal scale is one inch to ten feet, and the vertical scale is one inch to five feet, making the entire model about two by four feet. Such models of typical earthworks, together with the maps, photographs, and the specimens found during the excavation of them, would be of great value to science, and also of popular interest.

During the season of 1894 a survey was made of the "beds" upon the land of Mr. C. A. Glynn, some three miles distant. The location and size of the oak trees growing upon the ridges were noted, and cross sections of the earthworks were cut and photographed.

Thus far particular attention has been paid to the "garden beds" in Kalamazoo County, but similar earthworks remain to be examined in various sections of the State. There seems to be no proof that these were actually used as "garden beds," nor is there evidence to the contrary. No graves or specimens were found in excavating the sections.

These earthworks were described in the first number of the AMERICAN ANTIQUARIAN by the late Dr. Bela Hubbard, of Detroit.

The mold of the original model is preserved for the use of any scientific institution desiring to have a model cast. The Peabody Museum, of Harvard, and the American Museum of Natural History have already availed themselves of this opportunity, which can be secured by addressing Mr. Smith, at the American Museum of Natural History, New York City.

KING DAVID'S STAIRS.

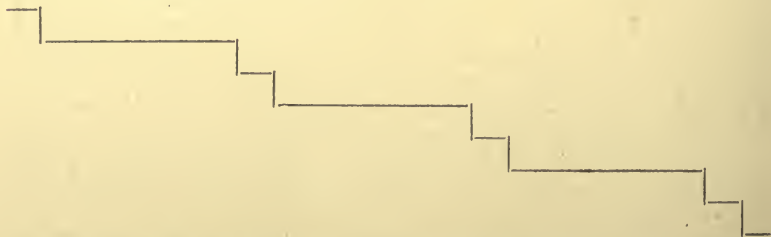
BY THEODORE F. WRIGHT, PH. D.

There is much excitement at the present time in the minds of those interested in the work of the Palestine Exploration Fund on account of the discovery by Dr. J. F. Bliss, of a stone stairway in the Tyropœan Valley, at Jerusalem. He has lately been at work on the south side of the present city wall, but within the limits of the ancient city. This valley extends from about the middle of the northern wall southward to the valley of Hinnom and so divided the city into an eastern and a western half. Across the valley the arches called after Wilson and Robinson, and discovered some years since, formerly stretched.

Of course, at times when the buildings have been thrown down, the Tyropœon Valley received a large part of the rubbish, and is, therefore, now more deeply covered with accumulated rubbish than any other part of the city. It has been ascertained that this rubbish covers the original surface to a depth, in places, of one hundred feet. Is such depth of debris to be found anywhere else in the world?

Dr. Bliss is working in the lower portion of this valley and has uncovered a paved street leading down to a gate already found. This street, near the point where it passes about thirty feet west of the Pool of Solomon, has a stone curbing and is twenty-four feet wide, which is very wide for a Jerusalem street.

Just here there is a flight of steps in the street. Thirty-four steps have already been uncovered. They reach from curb to curb. The peculiarity about these steps is that they have broad and narrow treads alternately. They all have about seven inches rise, but the treads are either about one foot four inches or about four feet six inches broad. This may be represented thus:



What can be the meaning of this arrangement? Is it possible that the steps were thus adapted to horses, which could use only the broader ones? This street would lead from the place called "Solomon's Stables," and which was certainly used by the Crusaders for that purpose.

As usual, this discovery illustrates and confirms the Scriptures. We read in Nehemiah, third chapter, of the repairing of the city wall done under his oversight, and the difficult portions of the work are described. Shollure is said to have repaired "the gate of the fountain and the wall of the Pool of Siloam by the King's garden, and unto the stairs that go down by the City of David."

All this part of the wall has been a mystery until now, but now it is perfectly plain, for here are the stairs, and the pool is known, and the gate is undoubtedly the one uncovered by Dr. Bliss.

Of course further discoveries cannot be very far away. The next portion of this wall mentioned in Nehemiah includes the "sepulchres of David and the house of the mighty."

A full account can be had only in the *Quarterly Statement*, which is sent to all subscribers. Dr. Bliss now has the assistance of a draughtsman, Mr. Dickie, so that the reports are fully illustrated, except that Mr. Dickie suffered a temporary disability from an assault, for which the government severely punished the offenders.

The Fund is now spending five hundred dollars a month on the excavations at Jerusalem, and additional subscriptions are needed.

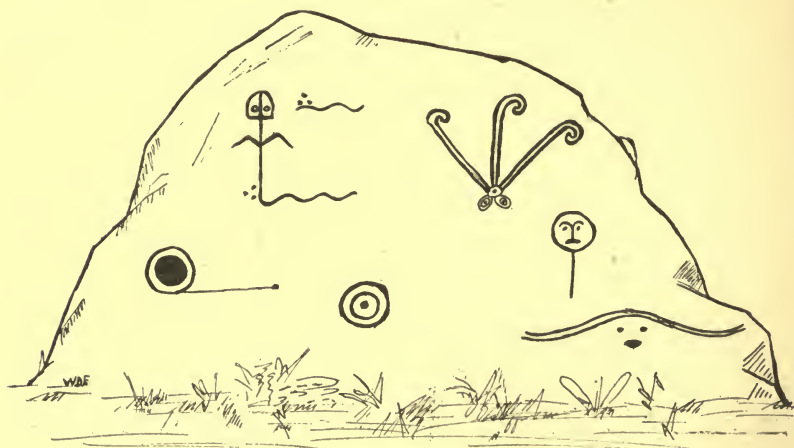
CARVED ROCKS ON THE MOSQUITO SHORE.

BY WILLIAM D. FARRINGTON.

Among the most curious relics of antiquity met with in Central America, that land of monuments, are the curiously carved or stained rocks, called by the natives "piedras pintales," which are found scattered along the eastern coast. These stones have nothing in common with the ruins of the great cities and temples which mark the site of an ancient civilization. They are essentially different both in conception, design and probable use. That they are the work of a different race than that represented by the huge stone structures of Yucatan, Guatemala and Honduras is evident to the most casual observer. The investigation of these monuments must be a separate branch of study in American antiquities, and if their meaning is ever discovered and made known to the world, it will probably throw a light on the pre-Columbian history of America that will confirm or discredit the legends of the Nahuatls, Toltecs and Qicbes as we have them in their ancient books. It was probably an earlier race than these that littered the coast with rude monuments.

While parts of the isthmus connecting the continents is thickly strewn with ruins these other portions are practically bare of antiquities. Such a locality is the great triangle of

land between the Gulf of Honduras, the Caribbean Sea and the mountains of Nicaragua and Honduras. This was the original Mosquito Coast which now makes part of the states of Olancho and Colon in Honduras and Chontales in Nicaragua. This district is cut off from the great central table land by a mountain range which in all ages appears to have acted as a barrier to the spread of civilization. In all this district there are no ruins of cities or temples to show that it was once occupied by a great and dominant people. The monuments which do exist plainly indicate that the land was peopled by a race which could plan and execute rudimentary works of art far beyond the powers of the degraded Sambos who now occupy this coast.



SUN AND SERPENT SYMBOLS

These arts have been lost for centuries, even the traditions having disappeared. The objects taken from ancient graves are greater wonders to the Waiknas than to the archæologist. These Indian graves are common from Belize to Blewfields. Near Belize there are a number of tumuli called the Indian Hills in which have been found human bones and pot sherds. Scarcely a lagoon along the coast but has on its banks a mound or "huaco." In all of these are found bones, broken pottery, arrow-heads and beads, and, now and then, a small image indifferently fashioned out of gold. In several of these mounds fragments of European crockery and ironware have been found mixed with articles of undoubted Indian manufacture. This would indicate that the custom of burying in mounds, continued even after the discovery.

A number of masks, very similar to those found in Chiriqui, were unearthed about eighty miles inland from Cape Gracias a Dios. They were of clay mixed with gold dust, and were asserted to be the likenesses of former chiefs.

I personally visited such a burial place on the Rio Patuca in Honduras and made some excavations. The "huacos" are located about seventy miles up the river at a place called Ritatará, which in Mosquito means "the big grave-yard." There are several mounds of varying age, all containing aboriginal remains. In some of the mounds only purely Indian articles were found. In others there were iron arrow-heads and beads of European origin.

The only monuments left by these early inhabitants of this region are the *piedras pintales*; roughly painted or incised stones, very different from the great monuments of the interior. In Chiriqui these carved stones are more plenty. At Caldera, near the town of David, is a granite block five feet high by about fifty feet in circumference. Every part of it is covered with signs. One represents a radiant sun; others are heads of scorpions and fantastic figures. This sculpture is ascribed to the Dorechos, the ancient race of Chiriqui. Similar stones carved with figures of men, tigers and birds are not uncommon on the isthmus. Further north they are more scarce.

On the Mosquito Coast proper I only know of two examples of these stones. One on the Rio Mico, where there's a large rock on which is carved a coiled lizard about three feet in circumference. This is colored red, while a human figure which follows it is black. These figures are objects of awe to the Sambos and are frequently described as temples of the "*antiguos*."

The best instance of rudely carved rock that I have found on the Mosquito Shore is on the banks of the Plantain River in Honduras. About thirty miles above the mouth of the river is an out-cropping of granite, and for several miles the shore is strewn with large boulders. At a place called Walpulbun, from Walpa-rock and Ulbun-Carved, there is a large boulder ten feet high and double that length, carved with rude figures. This boulder stands on the river bank just above a heavy rifle. On the river side of the rock are carved several figures, irregularly placed, as is shown in the accompanying drawing.

The carving is at present about an inch deep, but as the rock is much weathered it is probable that originally the incisions were much deeper. They are yet clear and distinct, however, and do not appear to have lost any of their essential parts.

Each of the figures shows the circle in one way or another. In the majority of figures concentric circles are shown, invariably with a solid patch in the center. The first figure is that of a snake with wings, recalling the Quetzal coatl of the Toltecs. Whether the people who carved these symbols were of the Toltec race or of an older race influenced by the advance of a conquering people, will probably never be known. The presence of the winged serpent, however, would indicate some sort of intercourse.

Another symbol is like the suns found in Chiriqui, but yet more nearly resembles the sun as depicted in ancient British

rock inscriptions. The last figure strongly suggests the head of an ox or buffalo, an animal totally unknown on this part of the continent at the time of the discovery. Is it possible that the inscription is so ancient that at the time it was cut the bison extended as far south as the Gulf of Honduras? Or does it suggest that the people of the feathered serpent came from the land of horned cattle—the north? These guesses were made while copying the original inscription, but like all guesses based on a single fact, are practically worthless.

None of these figures appear to follow any law of symmetrical arrangement. Symmetry being the first aim of barbarous peoples in their attempts at ornament it is certain that these figures had some other meaning than that of mere ornament. They were at one time symbols full of significance, recording ideas held to be of vital importance to the people who used them, but whose very name has now become a matter of doubt.

The origin of aboriginal ideas in decoration was strongly suggested to me by one of my boatmen on the Rio Roman. Idly picking up a curled tendril of the convolvulus, he amused himself by printing in the wet clay of the river bank a line of scrolls with figures in combinations, exactly like ornaments I had often noticed on pottery from the tumuli. These national dies and stamps are so plenty and of such diverse forms in the tropics, that it seems very probable that they were originally used as the basis of ornament on vessels of common use. This idea appears to me more plausible than the theory that all ornaments had a religious or symbolic basis.

The question of the authors of these rock inscriptions seems almost impossible of solution. At the time of the discovery of the coast the Indians were found to be, in respect to civilization, far below the inhabitants of the plateaus of Guatemala, Salvador and Honduras. They were designated as Xicaques and Poyas. The Towkas, some of whom still live on the banks of the Patuca River, and the Secos of the Black River, are evidently a part of the Poya stock. According to Oviedo the people of this region were called Chontales, Chontal having the same significance as Barbarian to the Greeks. In other words, the more civilized people of the plateau called them savages.

It is possible that the ancestors of the present inhabitants of the country on the sides of the mountains back of the Mosquito Coast were the authors of these inscriptions; but if this is true most of the knowledge of the ancient wisdom of the race has been lost. They still, however, retain sufficient racial peculiarities to make it probable that a careful study of the present tribes would throw light on these curious monuments of antiquity.

WHEN PATLATCHES ARE OBSERVED.

BY JAMES DEANS.

Some time ago I sent you the first half of this paper on the patlatches of our aborigines; to-day I send you the other half. There was another sort of patlatch, which I shall now explain. It has been from remote ages the custom of our aborigines, at least of those living near the northern coasts, to at first give their children filthy names, which they could not be otherwise than ashamed of in riper years, and endeavor by all means to obtain a better one.

This could be got in the following manner: A certain amount of goods had to be given to the chief and to the tribe as a patlatch, for which he or she obtained, not only a better name, but also a higher rank amongst their people. Along with the new name and rank was a dance for the occasion, and was the principal one that night, because it belonged to the new name and rank into which the party was initiated. The means to obtain this had to be acquired by their own exertion, industry and bravery. A person who had some push about him soon got ahead and was respected by the whole village, while a lazy, shiftless person got neither name nor rank, and was looked upon as little better than a slave. Girls, too, at the age of puberty, had to give a patlatch, at which time she gave away the savings of years; that is, she had been saving up for years in anticipation of living to see that day. With the first appearance of her womanhood she was shut up in a small room, which she was not allowed by any means to leave for one month. Her food was even passed into her room. When again at liberty she called together the villagers, and to them gave away all she had of personal property. In return she got a better name and a higher social position in the tribe, and at the same time had a hole punched in her lower lip, preparatory to wearing a lip piece or labret. These labrets, by the social usages of these people, had to be exchanged for bigger ones every time she made a patlatch, until, in very old women, their faces looked hideous. The Hidery women's greatest ambition was to be like Cal-Cate-jude, the typical woman of the northern tribes, especially of the Hidery. The girls' room was generally a corner of the house partitioned off by blankets or calico. On the front of her room was hung one of her blankets with the crest sewed on it in beads, or with colored thread. The name given by the Hidery to this ceremony is "Lull." When her lull is over, and she is giving her patlatch, they have the dance which belongs to her crest, and so ends her lull.

As soon as young men or women were able to save enough they had themselves tattooed — the men on their breasts, arms and legs, the women on their legs, and I think, their shoulders only.

For each part of the body that was tattooed they had to give a patlatch of ten blankets, or fifty blankets for legs, arms and breast, or a money value of, at least, \$250. The figures tattooed on their bodies showed the crest, gens and social rank of the party, represented by animals, birds, fishes, sun, moon, and thunder bird. If the party tattooed belonged to the raven phratry or brotherhood, he or she could only use the figures belonging to that phratry. The same may also be said of the Eagle phratry.

I here speak of the Hidery people of Queen Charlotte's Islands and southern Alaska. These later sort of patlatches no longer exist. At least, amongst the Queen Charlotte's Hidery. This brings me to a third sort of patlatch. When a man or woman wishes to build a house they had to save up enough goods to give away when it was finished. Every part of a house had its name, and a patlatch was given for each part ; so much for the posts, the boards and roof, beams, etc., etc. In building a house, the carved column, or as it is better known totem post,—the Hidery name is "gayring"—always received more attention than other parts, because of its connection with the family, social standing and history.

The gayring was prepared in the following order : First, a number of men were sent to the woodlands to choose a good and straight cedar tree, which was felled and stripped of its bark, then smoothed, hollowed out and floated to the village, where the carvers took charge of it.

Their first step was to measure it into divisions of four, five and six fathoms of six feet each, or 24 feet the shortest up to 60 or even more, the longest. A patlatch of ten blankets was given with each fathom; or, at the lowest estimate, a cash value of \$50 for each fathom, or \$250 for a gayring of five fathoms. Connected with house building is the selection of a wife. Before her husband can claim her he has to make a patlatch to the girl's parents of the value of fifty or one hundred dollars, or more, according to agreement.

The next and last sort of patlatch I shall mention is of a different sort, one which was all loss with no profit. As the experience of the writer of the above quoted report and mine are the same, I shall again refer to it. According to Indian ideas, any moral or material harm done to a man can be made good by an adequate patlatch. Thus, if a man is ridiculed by another, he gives away a number of blankets to his friends, and thus regains his former standing. For instance, the grandson of a chief, by unskillful management, upset his little canoe near the shore, to which he had to wade. The grandfather felt ashamed on account of the boy's accident, and gave away a blanket to take away remarks on this subject.

In the same way, a man who feels injured by another will destroy a certain amount of property, then his adversary is compelled to do the same, else a stain of dishonor will rest upon him until he destroys the same amount of property — or, if he refuses to do so, all his lifetime. I have heard of a case in which a man fancied another man had in some way or other injured him ; so in order, as he thought, to punish his adversary, he destroyed all the property he could spare. His adversary quickly responded by destroying double the amount, which the other was unable to do, and so the whole village laughed at him.

All of these patlatches, except the first mentioned, have, as far as I know, long been discontinued. That one is still held by sufferance. Several years ago all patlatches were, by act of Parliament, declared illegal, and all who held them were liable to fine and imprisonment. This has been done lately on the Nords, where a chief held a patlatch and where, just now, the Indians threaten to set the law at defiance and hold them. A deputation has been sent by the northern aborigines to Victoria, seeking redress and a refunding of the money unjustly taken from them by an obnoxious law. It has been to the interest of several parties to have these patlatches abolished, and false representations have been made to the Indian Department.

Patlatches are time-honored festivals of our aborigines, and probably existed before the adoption of Christianity.

What right have we Canadians to try and stop those poor people having a reunion occasionally ? If the Indians were the ruling power, and said to us you must stop your feasts and holidays or we will imprison you and enact heavy fines, how would we like it ? Methinks I hear you all say "Not at all — we have a right to all feasts and holidays as long as we behave ourselves." The aborigines, on the same condition, have the same rights. Parties writing from the north against their continuance, say they knew several people who lost their lives by attending patlatches, by being left alone in the woods. If any did so, they must have been Humatsa, under training, and not at all connected with patlatches.

In conclusion, let me say a patlatch is simply this : A party has a little wealth which he wishes to dispose of to advantage, by not only doubling it, but by getting a new and better name as well as a higher social standing. He invites his friends. When they come he gives all he has to all who choose to accept it, with the understanding, by both giver and receiver, that all has to be returned double as soon as possible.

If any one who had got some of the property given away, died, those who inherited his name and property had to return all according to agreement, or rather social usages of these people.

A CHOCTAW CEMETERY IN MARENGO COUNTY, ALABAMA.

BY H. S. HALBERT.

In the summer of 1887 I received a long letter from the venerable Rev. J. G. Jones of Hazlehurst, Mississippi, from which I quote the following extract :

"That part of South Alabama known as the canebrake country must have been thickly settled by the aborigines, as we infer from the great number of Indian relics there éverywhere to be found. About 1826, a venerable elder of the Methodist Episcopal Church, by the name of Monaghon, settled in the canebrake about the center of the northern part of Marengo county. The cane was not very thick about his place, but it was well covered with a growth of red cedar. The family had no slaves, and the old gentleman and his stout sons did the farming. In 1827 (when I was often at his house) in flushing up a piece of new ground one day, he noticed that his plow began to rattle as though going through a bed of pebbles. On looking down he saw he was turning up human bones. On further examination, he found a considerable space covered with bones. The skeletons were very close to each other and placed in a regular row, with alternate heads and feet ; that is, one head toward the east and the next toward the west. No bone was seen on the surface, but there was only about four inches of solid earth over them. Now, the bed of bones was too large for a family or even neighborhood cemetery, and they were not buried in the way Indians usually bury their dead. Were they commencing a burial mound, intending to put on additional layers of skeletons and earth until raised to the usual height of burial mounds ; or had there been some fatal epidemic that led to a hasty burial of their dead ; or had there been a battle there and these were the bones of the slain ? I am sure I do not know ; but I am inclined to think it was the hasty burial of those slain in battle. There may have been a battle there during the Creek war of 1813-14."

The above described cemetery was evidently an unfinished Choctaw burial mound, as Mr. Jones first conjectures, and of considerable antiquity. There was no battle fought in Marengo county during the Creek war of 1813-14. I have been informed by an old Indian countryman that some sixty years ago, in his boyhood, a tradition was prevalent among the Choctaws that their forefathers were accustomed to erect mounds over the bodies of their dead, especially over those of distinguished rank. As the above described cemetery was in the Choctaw territory, it must certainly be assigned to that people. I do not think Mr. Jones' description of the position of the bodies is very clear. The cut or diagram which I give below is my idea of his meaning, the round head of each line representing the head of the body or skeleton.

ANCIENT AND MODERN PUEBLOS COMPARED.

BY STEPHEN D. PEET.

We now turn to the comparison of the architecture of the ancient and modern pueblos.

We have shown, elsewhere, that there were several districts, each one of which was characterized by a different style of building. Those of the central districts on the Zuni and Chaco rivers, were erected in terraces around a court with the apartments close together, after the "honey-comb" pattern; those in the district on the Rio Gila were separate buildings, scattered over a level valley along the side of irrigating canals, with one large building, which might be called a "castle" or "citadel" in the centre of the village; those situated to the southeast presented a combination of the "cavate house" and the pueblo, as there are many caves in this region and near them the ruins of ancient pueblos. On the Rio Grande the style was to build in terraces around the four sides of a court, or on two sides of a stream, with the stream draining the court. On the Rio San Juan there was a great diversity of style; some of the ruined buildings are in the shape of terraced pueblos, built after the "honey-comb" pattern; others are separate buildings, grouped together, but making a 'straggling village'; others are cavate houses with towers above the caves; the typical structures of this region are the cliff-dwellings or cliff villages, which were built into the sides of the cliffs, and so arranged that the court should be in the rear of the buildings and the towers in front of the buildings, the whole group or line of structures forming a compact village, which was made safe from attack by its situation, the houses being difficult of access.

This classification of the districts corresponds closely to that recognized by the Spaniards, as will be shown by the following quotation from Castaneda: "The name Chilticali, was given in former times to this place (Casa Grande), because the Friars found in the neighborhood a people who came from Cibola. The house was large and it seemed to have served as a fortress. Up to Cibola, which lies eighty leagues to the north, the country rises continually. The province of Cibola (Zuni) contains seven villages; the largest was called Muzaque; the houses of the country, ordinarily, consist of three and four stories, but at Muzaque some have as many as seven. Twenty leagues to the northwest is another province containing seven villages (the Moqui villages); the inhabitants have the same manners, wear the

same dress, and have the same religions as the inhabitants of Cibola. It is estimated that three or four thousand men are distributed among the villages of these two provinces. Tiguex lies to the northeast at a distance of forty leagues from Cibola; between these two provinces is the rock of (Acuco) Acoma. The province of Tiguex contains twelve villages situated on the banks of a great river. It is a valley about two leagues broad. It is bounded on the west by very high mountains covered with snow. Four villages are built at the foot of these mountains and three on the heights. Farther north lies the province of Quirix, which contains seven villages. Seven leagues to the northeast is the province of Hemes (Jemez), which contains the same number. Forty leagues in the same direction lies Acha (Chaco). Four leagues to the southeast is situated the province of Tutehaco, which contains eight villages."

A description of the village of Laguna, given by Castaneda, in 1540, will show to us what its style of architecture was at that time: "The village of Cicuye can muster about five hundred warriors, dreaded by all their neighbors. It is built on the top of a rock and forms a great square, the centre of which is occupied by an open space containing the estufas. The houses have four stories, with terraced roofs, all of the same height, on which one can make a circuit of the whole village without finding a street to bar one's progress. On the first two stories there are corridors, like balconies, on which you may walk around the village and under which you may find shelter. The houses have no doors in the basement; the balconies, which are on the inside of the village, are reached by ladders, which may be drawn up. It is on these balconies, which take the place of streets, that all the doors open by which entrance is gained to the houses. The houses that front on the plain stand, back to back with the others which look upon the court. The latter are the higher, a circumstance of great service in time of war. The village is further surrounded by a rather low wall. There is a spring, which might, however, be turned off from the village."

As to the manner of building the pueblos, Castaneda says: "The houses are built in common; it is the women that mix the mortar and erect the walls; the men bring the timbers and do the joinery. They have no lime, but have a mixture of ashes, earth and charcoal, which replaces it very well, for though they build their houses to the height of four stories, the walls are no more than one-half of a fathom thick. They collect great heaps of thyme and rushes, and set them on fire; when this mass is reduced to ashes and charcoal, they cast a great quantity of earth and water upon it and mix the whole together; they coat the whole wall with this mixture, so it bears no little resemblance to a structure of masonry." As to the estufas, Castaneda says: "They lie underground in the court yards of

the village; some of them are square and some of them round; the roof is supported by pillars made of pine trunks. I have seen estufas of twelve pillars each, of two fathoms in circumference, but usually there are only four. They are paved with large, polished stones, like baths in Europe: In the centre is a hearth on which a fire burns, and a handful of thyme is now and then thrown on the fire; this is enough to keep up the warmth, so that one feels as if in a bath; the roof is on a level with the ground. The houses belong to the women, the estufas to the men."

The following summary is given; Cibola, the first province contains seven villages; Tusayan seven; the Rock of Acuco one; Tiguex twelve; Tutehaco eight, reached by descending the river; Querix seven; among the Snowy mountains seven; Ximena three; Cicuye one; Hemes seven; Aguas add Calientes three; Yunque six, on the mountain; Valladolid or Braba one; and Chia one. This makes seventy in all. Tiguex is a central point and Valladolid is the last village up the river to the north-east." The most of these villages have been identified: Cibola with Zuni, Tusayan with Moqui, Acuco with Acoma, Tiguex with Albuquerque, Tutehaco with Tutehaco, Quirix with Queres, Muzaque with Toyoalana, Cicuye with Laguna, Hemes with Jemez, Braba with Taos, Chia with Sia. The Cliff-dwellings in the Mesa Verde and the ruined buildings on the San Juan, and on the Rio de Chelley, do not seem to have been known to the Spaniards; at least, they are not mentioned.

There are traditions among the Tusayans which make mention of all of these districts, and show the migrations which took place towards the central province, thus giving a history of the entire region. These traditions have been gathered by Mr. A. M. Stephen. The following is the summary of them, with the names of the totems; The Snake people and the Bear people came from the north by way of the Rio de Chelley; the Horn people from the Rio Grande, also by way of the Rio de Chelley; the Squash and Sun people from the red land of the west, by way of the Colorado Chiquito; the Water people from the far south, by way of the Little Colorado, where they had irrigating canals; the Asa people came from Rio Chama, by way of San Domingo, Laguna, Acoma and Zuni; the Hano people from the Rio Grande, by the river de Chelley, and settled at Hano; the Payup-ki people came from the north, from the San Juan river. They first moved to the Jemez mountains where they remained until the Spanish Massacre in 1680; they then moved west to Ft. Wingate, and so on, to the Tusayans, and settled at Pay-up-ki.

This same division of the Pueblo territory is exhibited by the languages used by the surviving tribes.

According to F. W. Hodge the Pueblo languages are divided

into five stocks, as follows: (1) Tanoan, including Tano, Tewa, Tiwa, Jemez and Piro, all situated on the Rio Grande. (2) Keresan, these occupy the Pueblos of Acoma, Laguna, Sia, Santa Anna, San Felipe, Santo Domingo and Cochiti Cochiti. (3) The Zunian stock, which occupy the Pueblos of Zuni. (4) The Shoshonean stock occupy the Tusayan towns of Walpi, Mas-hongnavi, Shipaulovi, Shumopavi, Oraibi. (5) The Pimas occupied the Rio Gila. (6) The Papagoes occupied the province of Sonora, Mexico.

These records confirm the traditions preserved by the Indians and show that there were different tribes in the pueblo territory; that they came from different directions, were of different origin, settled in different districts and had a separate and distinct tribal history — a history which we will read in the architecture, art, and other tokens of the district.

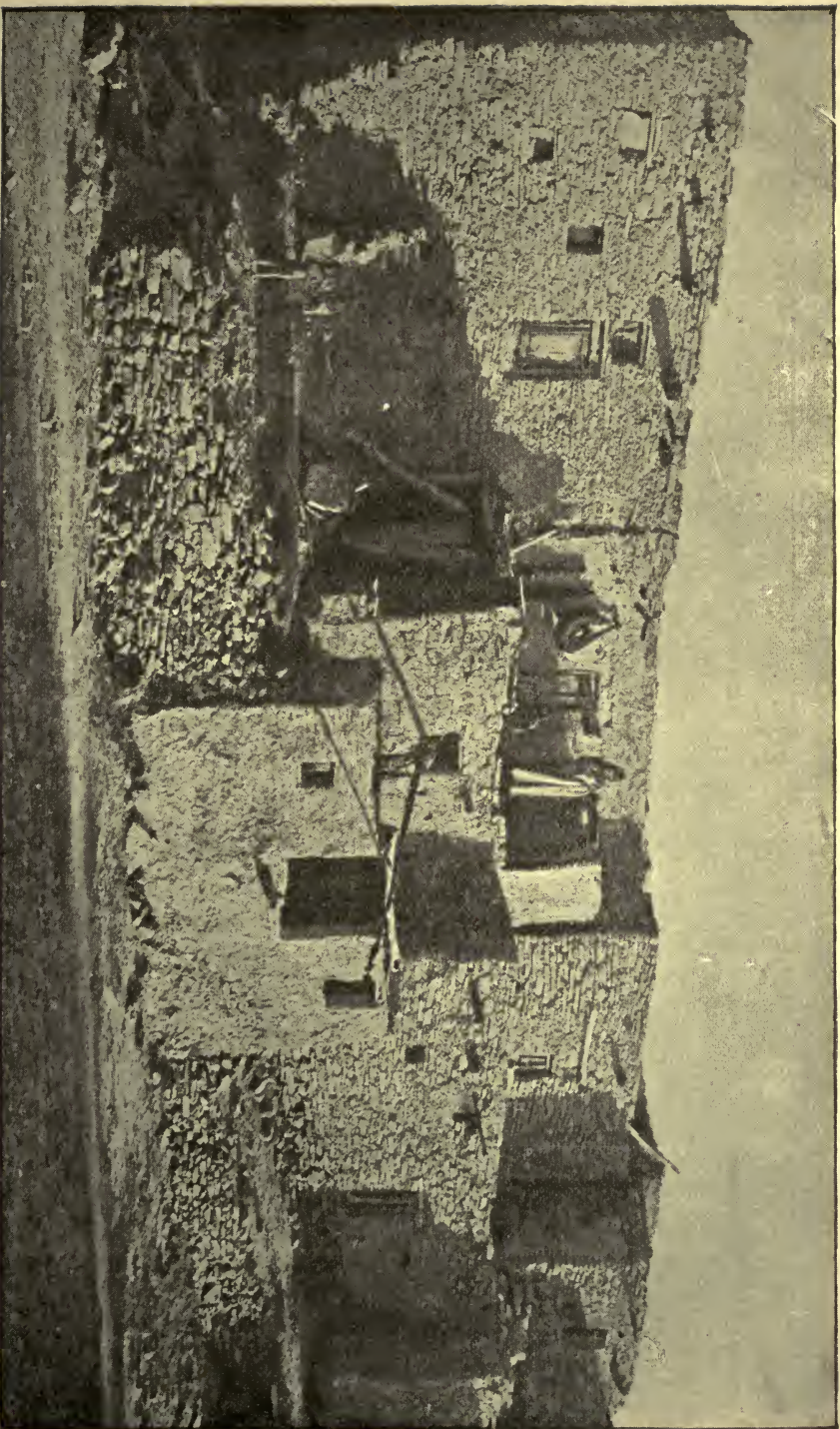
It is indeed a favorable field for one who is given to theorizing to make out a history of the progress of society, and to show that the caves were the first abodes, after them the cliff-dwellings, after the cliff dwellings, the fortresses on the Mesas, after these the "great houses" or pueblos in the valleys, the pattern being drawn from the shape of the Mesas, or if this fails, to advance another theory. The primeval abode was the hut, the shape of which is preserved in the solitary houses; the next stage is marked by the clusters of huts in a straggling village; the third by the compacting the apartments into one great house.

These theories are very plausible, but history does not confirm them, for the fact is, the caves were inhabited quite as late as the pueblos by tribes whose names and migrations are known. The Cliff-dwellings were erected after the ruined pueblos in the same region, and by a people who once occupied the ruins, but were compelled to leave them and resort to the cliffs for defence.

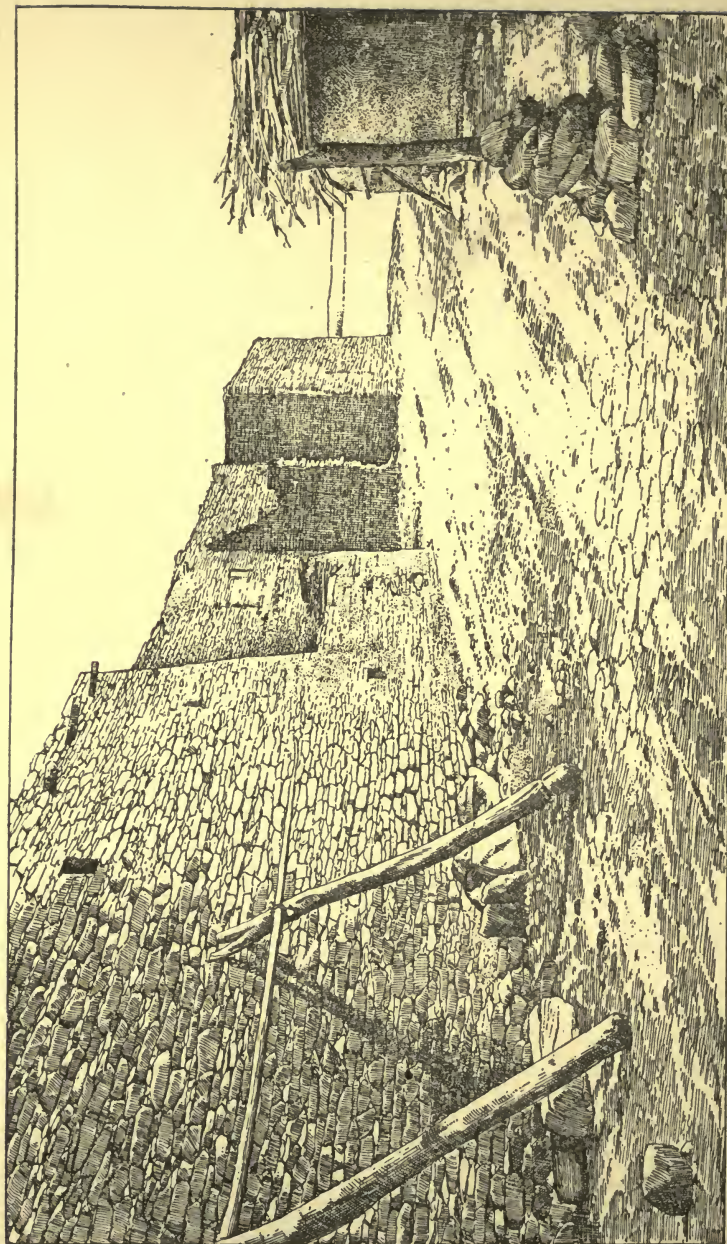
The pueblos of the central district were the final resort of the tribes, who built both the Cliff-dwellings and pueblos, but were driven by the Apaches and other wild tribes from their ancient homes and compelled to concentrate their settlements here, for the sake of defense.

There were, indeed, great similarities between the structures of the different districts, for all contain the same elements, meet the same necessities and seem to have been erected by a people of the same grade of advancement. Yet there are differences enough to show that the people were divided into tribes, and that each tribe had its own ancient habitat, and left in its habitat those tokens by which we may recognize them as plainly as if they were still living and appeared before us in their usual costumes; and speaking their original languages and were practicing their tribal customs. This may seem to be a

*It may be difficult to fix upon the boundaries of these provinces, yet if we examine the ruins which predominate, we may not only decide as to the tribal habitat but even learn much of the tribal history.



MODERN FORM OF ROOFS OR TERRACES AT ORAIBI



A TUSAYAN PUEBLO SHOWING MODERN STYLE OF WALL

strong statement, yet if the science of archæology as distinguished from ethnology is worth anything, it ought to enable us to travel through such a region as this, and learn the character and the condition of the people as clearly as we could if we were in the midst of living tribes. We do not need to confine ourselves to the architecture of the region, for there are many other tokens, such as the different specimens of pottery, the various relics in stone, bone and wood, textile fabrics, occasionally idols and images, skulls and human remains, and what is more important the petroglyphs¹ or rock inscriptions which contain the tribal emblems or clan totems. All of these exhibit the tribal divisions. While there was a similar mode of life, a similar grade of society, a similar tribal organization, there are evidences that the different tribes inhabited the river valleys and developed styles of architecture peculiar to themselves.

It may be well, then, for us to take these ancient pueblos and make them our special study,² for by this means we shall be able to trace the tribal history back to pre-historic times.

There may have been a succession of population in each province, some of them having been lower, others higher, in the scale of progress, but in many of the provinces we find that the last to occupy the region were the lowest, the wild tribes such as the Pimas³ Navajoes, Apaches, having succeeded those who were sedentary in their habits and more advanced in their civilization. It is the middle period of occupation which most interests us, for in this period all of the elements of Pueblo life appeared.

(1) The Petroglyphs of the different provinces seem to differ, as will be seen from examining descriptions given by W. H. Holmes, Dr. Washington Matthews and others. The pottery found in the different river valleys have diverse patterns and material, according to their age, the black and white, which is generally considered the oldest, being found only in certain exceptional districts.

(2) The following are the names which have been given to the different buildings to describe their style, each name showing the characteristic of the architecture in the different provinces: (1) The great house, of the honeycomb pattern, is illustrated by the Zuni Pueblos, but prevailed throughout the entire region. (2) The "citadel" pattern is illustrated by the ruins of Casa Grande on the Gila, Casas Grandes, in Sonora, Mexico.

(3) The "two house" pattern is illustrated by the Pueblo Taos and the ruin on Animas River; the "Cliff house" pattern is illustrated by ruins found on the Mancos, Rio de Chelly and the Rio Verde in Arizona.

(4) The citadel pattern. The "two house" pattern may have been used for the two parts of a "phratry" as has been suggested by Walter J. Fewkes, the two sections of the Cliff house at Kalatki, on the Rio Verde, having been used for that purpose.

(5) The "cavate house" is represented by specimens described by Mr. W. H. Holmes, on the San Juan, and by Major Powell and others as on the Rio Dolores and on the Rio Grande.

(6) The "small house" pattern is illustrated by the solitary houses, numerous lodgings, situated mostly among the mountains.

(7) "Straggling villages" is a term applied to various sites wherever the houses are scattered.

(8) The "boulder sites" are found mainly on the Rio Verde near ancient Acequias. These, however, are not characteristic of any tribe or province. (9) "Round towns" are found in ruins in the Moqui and Zuni territory "Haliendad."

Some have maintained that the Pimas are the survivors of the people who built Casa Grande and the Navajoes are the survivors of those who built the Cliff dwellings, but the contrast between the rude tents which they occupy and the stone buildings seems to controvert it.

The analysis of the architecture of this period reveals certain features¹ which are common throughout the entire region, thus making it probable that there was a growth and development of what might be called the Pueblo style entirely separate and distinct from every other. Yet it was a growth which came from and was best adapted to the domestic life, the tribal organization and the peculiar customs of each tribe.

It is everywhere recorded that the "house" belonged to the women but the Kivas belonged to the men. The men dwelt apart from the women. As a result we find that the houses were always arranged with the domestic apartments closely grouped and compacted, the security and convenience of the

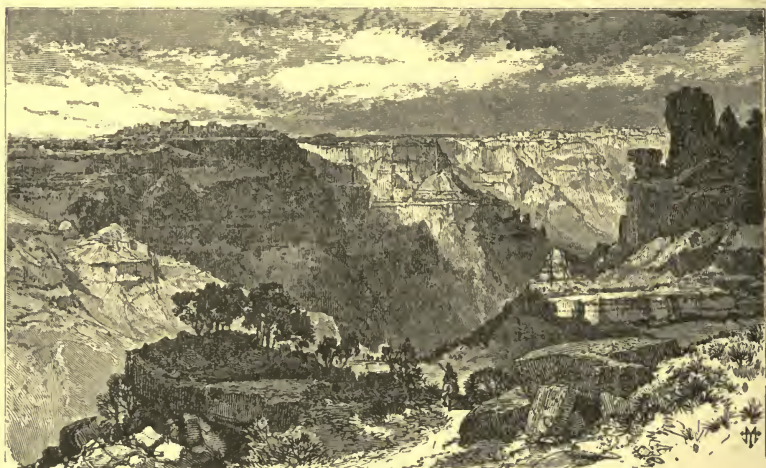


FIG. 1. VIEW OF MASHOGNAVI AND SHUPOLAVI

families being the chief object. The Kiva usually adjoined the Pueblo, being placed in the courts.

Among the Cliff dwellers, as we have seen, the domestic apartments, were placed high up on the cliffs, and the Kivas or assembly places and towers, were placed in the valley below. In the case of the Cave-dwellers, they were on the summit of the Mesas, above the caves, but the principle was the same, still the Kiva was a part of the village, but was for the men.

The store houses were always close by the domestic apartments. In the Pueblos they were in the lower story and were always dark, and reached through trap-doors in the apartments.

¹ These features were such as pertained to village life everywhere, for the villages in the Mississippi valley belonging to Mound-builders and Indians, had courts, estufas, store-houses, towers or look-out stations, occasionally terraced pyramids and apartments or dwelling places, clustered close together, very much as the Pueblos did. They were also surrounded by garden beds and reservoirs.

In the Cavate houses the store-rooms were at the side of the living rooms, in apartments which were excavated farther into the cliff, and were consequently dark and unpleasant. In the cliff houses the store-rooms were placed on a ledge above the living rooms, but sometimes were scattered along the cliffs in the little recesses, pockets, cubby holes, which could be found in the vicinity of the house.

Another peculiarity of the ancient pueblo was that it represented a peculiar stage of advancement, that stage in which architecture began to be developed and in which the rudiments of art also appeared. The houses which were erected contained all the architectural elements, found in any modern dwelling, such as walls, doorways, windows, roofs, dormitories and kitchens, and in this respect would differ from the wild tribes who dwelt only in tents or wigwams.¹ They differed, however, from one another in the finish of the walls, the shape of the doors, the size and arrangement of the rooms, in the site chosen, and in the material² used, each district presenting pueblos,³ which, in these respects, were peculiar, but in other respects, were similar.

Specimens of the different styles⁴ are given in the cuts: Fig. 1 illustrating the location; Fig. 2 the finish of the walls; Fig. 3 the shape of some of the buildings; Fig. 4 the shape of the rooms; Figs. 5-6 the shapes of the doors and windows; Fig. 7 the location of the estufas; Figs. 8-9 the location of the towers and other buildings.

¹ The most common method was to erect a compact pueblo, in the valleys of the streams and near the fields, placing the apartments close together and making the walls serve as a defense, there being no doors in the lower story, and the homes of the people were in the upper stories.

² The material from which the houses were built depended upon the character of the country surrounding, as Mr. Fewkes says, "men of the same culture would build *adobe* houses in adobe plains, in tufaceous, they would burrow troglodytic caves; in the canons where there were extensive shelter caves they would build Cliff-houses, while upon the rocky mesas and in the mountain regions they would naturally build stone houses, taking the stone from the cliffs and making the terraces to resemble those of the mesas." This would show that the people were greatly under the influence of their environments but does not refute the position that there were tribal lines or inherited qualities which can be recognized in the structures and art forms which remain.

In reference to the pottery we might quote the testimony of Nordenskjöld, Holmes and others as to the different kinds of pottery found in the different provinces. The black and white pottery is very common in the northern and western provinces and among the older ruins, but the red pottery is in the central provinces and among the more modern pueblos.

³ The pueblo structures were confined to the Great Plateau. All the structures outside of the bounds having a different pattern and different material, those at the north and west being merely huts built of wood and bark; those at the south being constructed of stone, built up as solid pyramids without any chambers in them, the houses and temples having been placed upon the summit; those at the east being mainly wigwams of bark and skin, or huts covered with earth, the Mound-builders houses having been erected on earth pyramids.

Buildings made from adobe were discovered by W. K. Moorehead in Monarch's Cave, near Cotton Wood, in Utah, constructed exactly the same as those on the Gila with posts and wattle-work. Adobe walls appeared in some of the buildings on the Rio Grande.

⁴ The style represented by Casa Grande, on the Gila, is found in Casas Grandes in Chihuahua, these being extreme points at which the Adobe structures are found; the Cavate style is represented by the houses on the Salado on the Rio Verde and on the Rio Grande near Santa Clara, as well as in Sonora, in Mexico. The small house pattern is found mainly among the mountains, specimens being numerous near the Rio Grande and near the Rio Colorado, some of them being built of *stone* and others of *lava blocks*.

The fashion of the doorways varied in the different provinces, for those on the Gila had sloping sides and narrow lintels, while those of the Cliff-dwellers were built in the stepped fashion, the sides notched, the lintels, much broader than the sills; those on the Rio Grande were sometimes square and sometimes stepped.

There were courts, streets, passageways, gates, and even balconies, terraces and circumvallations, in nearly all of the villages, but the arrangement of these was dependent upon the character of the ground on which the building stood. As to the location of the villages this would be decided by circumstances.



FIG. 2. ANCIENT RUINS ON THE ANIMAS

There were certain necessities which must be met, but in an arid region like this, were difficult to provide for. As a result, great sagacity was exercised in the choice of the location and great skill in over-coming the difficulties. The villages were placed near springs where there was an abundant supply of water and not very distant from the forests where wood could be obtained.

Near the villages were fertile bottom lands or arroyas, which could be irrigated, the water in them being taken from the me-

Lieut. Rogers Birnie says of these ruins: "We found what had once been quite a town, with two main buildings (phratry dwellings). One of them was rectangular with a small court flanked on either side by two circular rooms, two at the corners, three parallel with the longer side of the building, the remainder of the building divided into rectangular apartments, three stories high, a wall, quite perfect, standing in places 25 feet in height. Entering a room in ruins was found connected with an interior one by a doorway 4 ft. 4 in. high and 2 ft. 4 in. wide, cased with nicely dressed sandstone about the size of an ordinary brick; the lintel was composed of small round pieces of wood, the walls were 2 ft. 5 in. thick marked with crosses and inscriptions. The interior room was 14 ft. by 6 ft. 4 in. In the center of the building was a rectangular shaft 8 ft. by 6 ft.

The other main building is about 200 yards to the west of this and about 200 feet long and regularly supported on the exterior by buttresses. Above the buttresses the exterior wall shows some very pretty architectural designs. There is seen a projecting cornice, plain, composed of three or four courses of very thin reddish sand-stone, and again a course of nearly white stone, perhaps a foot thick, then other courses of different shades and thicknesses, alternate.

The entire masonry is built of courses of different thicknesses of stone of different colors.

sas or from the reservoirs above or from the streams and rivers below the villages; canals or acequias were always provided for directing and controlling the water; garden beds sometimes took the place of acequias and answered the same purpose.

There would naturally be some provision for defense as the people were surrounded by hostile tribes and were not always friendly to one another.

There were several ways of defending the villages.¹ One was to place the villages or pueblos on mesas that were difficult of access; another was to place them in the sides of the cliff making the height a source or safety; another was to build a citadel in the center of the village and surround it by walls and make it serve as a refuge for the people in time of attack. In a few

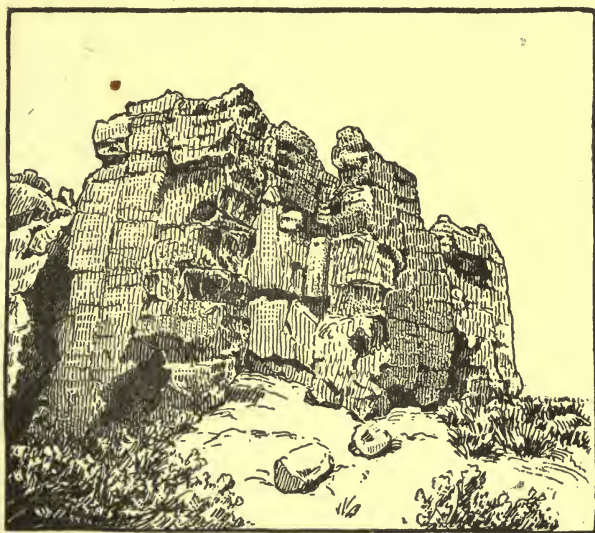


FIG. 3. VIEW OF CASA GRANDE

cases there were walled enclosures erected on the summits of the isolated mesas and these were used both for lookouts and fortresses.

It has been maintained by some that to build a separate fortress was beyond the reach of a people of this stage of advancement, but the facts are contrary to the theory.

¹ Bancroft states "that at Casas Grandes, in Chihuahua, there was a fortress built of great stones as large as mill-stones. The beams of the roof were pine well worked. In the center was a mound for the purpose of keeping guard and watching the enemy. It was located two leagues away, on the top of a high cliff, and was designed as a watch tower or central station." His account is taken from a writer in *Album Mexicano*, who visited Casas Grandes in 1842. The ruin Casas Grandes was located upon a finely chosen site commanding a broad view of the San Maguel River. The walls in some parts were 5 feet thick and from 5 to 40 feet high, composed of sun-dried bricks. See Bancroft's *Native Races*, Vol. V, page 606.

Walter J. Fewkes speaks of fortified hill-tops in the neighborhood of Red Rocks, also among the mountains of Arizona.

McGee speaks of one in the Magdalena valley in Sonora, Mexico.

That there were migrations among the tribes², in pre-historic times, is shown by the fact that the houses built in the style peculiar to each province are found at a distance from the center, the houses of the Cliff-dwellers having been found as far away as the Red Rock on the Rio Verde. The houses similar to those on the Rio Grande are found as far west as the Hovenweep.

With these remarks we proceed to describe some of the specimens of ancient pueblos.

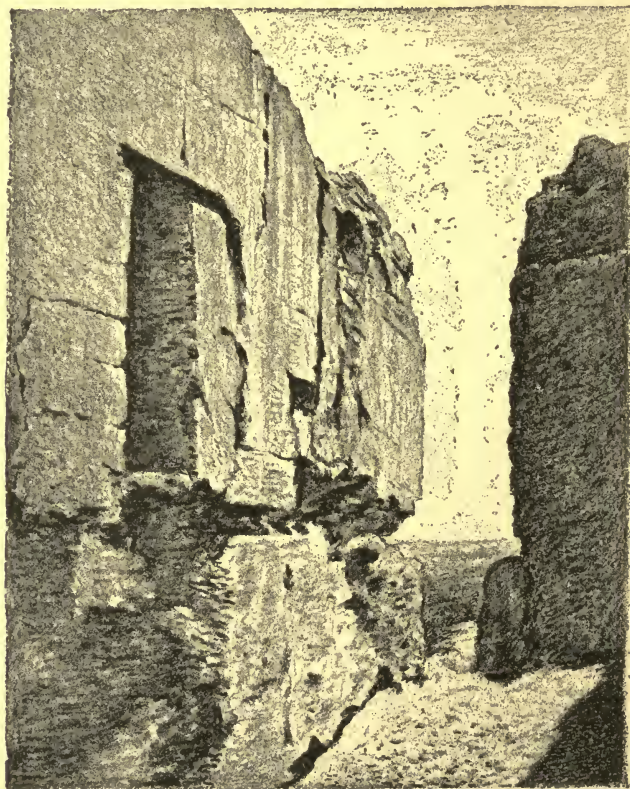


FIG. 4. EAST WALL OF NORTH ROOM

1. We begin with the ruins of Casa Grande on the Rio Gila.

² The question of kinship may be determined by the ruins which extend along certain lines, for if we can show connections at both ends of a line of habitation, we may draw inferences for the intermediaries. In this way the Cliff-dwellings at Red Rock on the Rio Verde and those on the Mancos, the citadels on the Gila and on the Sonora; the "great houses" at Zuni and on the San Juan, the two houses at Taos and at Quivira determined the tribal boundaries.

The survivors of the Pueblo tribes were found by the Spaniards in the central districts. But by studying their traditions we may trace their migration routes, and identify their stopping places, and so learn the movements which have taken place, but the differences in the architecture are, in all such cases, far more significant than their resemblances for they show the previous tribal history and the tribal wanderings.

These were the first visited by the Spaniards, and have recently been visited by American explorers, and have become well known.³

The following description, by Mr. J. W. Fewkes, will show the style of the building:

"This venerable ruin, which is undoubtedly one of the best of its type in the United States, is of great interest in shedding light on the architecture of several of the ruined pueblos which are found in such numbers in the Valley of the Gila and Salt Rivers. The importance of its preservation from the hands of vandals and from decay led Mr. Hemingway and others, of Boston, to petition Congress for an appropriation for this purpose. The petition was favorably acted upon. The ruin now stands in the midst of others, towering high above them. It is roofless, and not a stick of wood



FIG. 5. NORTH WALL OF NORTH ROOM

as large as one's arm remains in place in its walls. It is built of cubical adobe blocks several feet in dimensions. It did not stand alone originally, but there were other houses of the same massive construction near by. One of the best marked of these is a group of houses a few hundred feet north. There are also others to the north-east; they are covered with fragments of pottery of ancient appearance, which show that they are on the sites of former buildings. At about equal distances from the four sides of the Casa Grande there are mounds, which indicate the existence of former walls, and seem to mark the edge of the pueblo, in the middle of which it once rose like an acropolis or citadel. As one approaches the ruin along the stage road from the side towards Florence, he is impressed with the solidity and massive character of the walls and the great simplicity of the structure, architecturally considered.

The fact that the walls of the middle chamber rise somewhat above those of the peripheral is evident long before one approaches the ruin; this puts

³ The Government has made an appropriation, so that the building at Casa Grand will be preserved.

a certain pyramidal outline to the pile. The orientation of the ruin corresponds to the cardinal points. From the plan it will be seen that the bounding walls of the ruin enclose five chambers, which fall in two groups, twin chambers, one at either end, and triplets between them; the north and south extend wholly across the building, their walls forming the eastern and the western sides of the building, the three chambers of the middle portion extend in a north and south direction across the whole building. All the chambers of both kinds have a rectangular form, and their angles, as a general thing, are carefully constructed right angles, though the vertical and horizontal lines are seldom perfectly straight. The north room occupies the whole northern end of the ruin, and has all the bounding walls of the lower stories almost entire; the greatest length of the room is from the east to the west. There are good evidences of at least two stories above

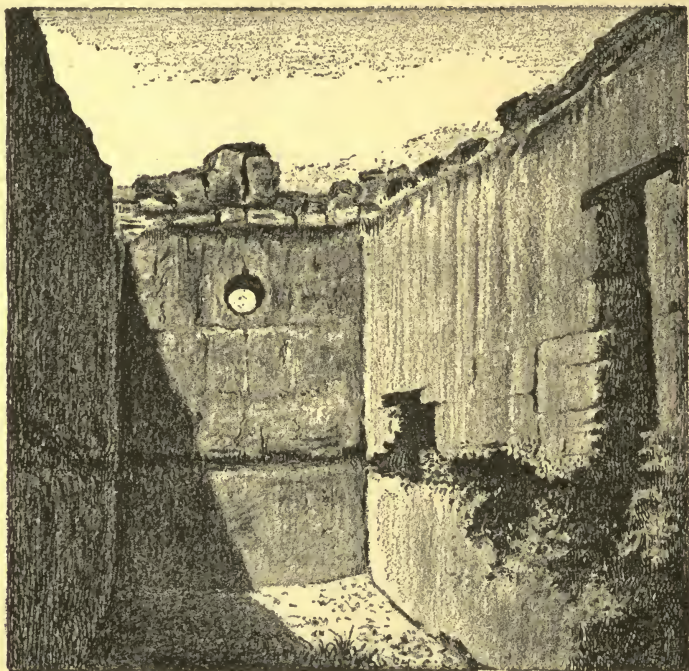


FIG. 6. SOUTH WALL OF NORTH ROOM

the present level of the ground; the western wall of the room is pierced by a single circle and a rectangular window, two openings lead from the chamber into adjoining rooms,—one of them into the eastern chamber, the other into the western. The passage-way into the east room is situated on the second story, and is very conspicuous; its sides slope slightly, so that the width of the opening is wider at the base. There is no passage-way into the middle chamber. The west room of the middle triplet has a rectangular shape, [its longest dimension being from north to south; it has an external entrance on the west side. There are indications of former passage-ways into chambers on either side, but no passage-way into the central chamber.

The eastern wall of this chamber is higher than the western, making the additional story of a central chamber. The east room, like that on the west, is longest in a north and south direction, and shows at least two stories

above the present level. One can enter this room from the side, and from it can readily pass into the central chamber. This is in keeping with what is known as ceremonial enclosures. The central room was a sacred chamber, it probably had an entrance from the eastern room and not from the others; the exterior entrance of this room is from the east, and was one of the principal entrances into the building, it shows well defined lintel marks. A wide passage-way from the second story into the north room occupies about a fourth part of the north wall; the floor groove of the second story is pronounced. The south wall of the first story of this room is intact, there is a passage-way into the south room which has vertical jambs still well preserved, but its top has fallen in.

The south chamber of the ruin extends, like the north, across the whole end. As with the northern rooms, there are openings into the western and eastern rooms, and no signs of an entrance into the central chamber. The western wall of this room is pierced by a small, square window-like opening high up in the second story. From this side of the room one can, without difficulty, make out two stories and the remnants of a third; the line of holes in which the floor logs formerly fitted can be traced with ease.

The central chamber differs from the others, in that it shows the wall of an additional story on all four sides, and has but one entrance, and this is from the eastern side, the walls are very smooth, and apparently carefully polished. There are well preserved evidences of the flooring, and the smaller sticks, which formerly lay upon the same, are beautifully indicated by rows of small holes. The walls of the third story, on the western side, are pierced by three circular openings, about five inches in diameter,—they were possibly windows or possibly “look-outs.” On the east wall there are three small round holes, on the north and south wall there are similar openings, one in each wall; these openings are, at times, placed as high as the head of a person standing on the floor of the third chamber. They appear to be a characteristic of the central room and of the third story.”

It will be seen from the description and from the cuts given, that the style of architecture on the Gila was very different from that which prevailed among the pueblos of the Zunis or Tusayans and on the Rio Grande, and entirely different from that of the cliff-dwellings farther north, but resembled that found in the so-called “Castles” farther south, especially those in Gonora and in the north of Mexico; the ancient forms showing as great contrast as the modern structures.

As to the style of architecture which prevailed in the Cliff-Dwellers district, we have already shown that there was a great diversity of structures, but the most prominent style was that which is called the Cliff-Town or “Fortress” style; as proof of this we shall quote the descriptions given by those who have explored in the region.

PREHISTORIC MIGRATIONS IN THE ATLANTIC
SLOPE OF NORTH AMERICA.

BY PROF. CYRUS THOMAS.

PART I.

The physical conditions of this section,—which embraces the region east of the Rocky Mountains and north of the Gulf of Mexico,—are not only widely different from those of the Pacific slope, but present no features calculated to determine the chief line, or lines of migration. The great rivers have frequently been referred to as marking these lines, but the mound testimony does not favor this theory, so far as it relates to the larger streams. Although the banks of the Mississippi are lined with prehistoric monuments from Lake Pepin to the mouth of Red River, showing that this was a favorite section to the ancient inhabitants, a study of these remains gives no support to the supposition that this great water highway was a line of migration. The types are constantly changing at short intervals as we move up or down the stream, indicating that the course of migration was across rather than up and down it. The same thing is true of Ohio. The St. Lawrence and Wisconsin, however, are probably exceptions. The smaller streams which traverse mountainous districts were doubtless lines of travel, and the great arteries were no doubt highways of traffic and of war parties, but there is no evidence to show that the latter were lines of migration. There are, in fact, no physical reasons why migrations within this area might not have been in any direction. It is true there are some lines which are traversed with greater ease than others, but there are no physical features sufficiently prominent to justify us in basing thereon a theory of migration.

As regards the supposed point, or points, of original entry, it would seem that the Atlantic Ocean offers a formidable barrier on the east, yet, as will soon be seen, it is here that some modern scholars seek the landing place of the first immigrants. The peninsula of Florida is easily accessible from the West Indies, and points on the Gulf coast. The great plains of the west were unquestionably a formidable barrier to the aborigines, more so in fact than has been generally conceded, but the Missouri River offers one line of transit, the shore line of the Gulf another, and the way is open from the north and northwest. It is evident, therefore, that any theory in reference to the primary migrations by which the area received its first inhabitants, in order to be worthy of serious thought, must be based on other considerations than the physical features of the area. If a satisfactory reply is ever made to this question, it will probably be based on the conclusions ultimately reached

in regard to the minor movements, that is to say, the movements of stock and tribes within the area. Therefore we turn our attention to these as the factors with which we have to deal in the attempt to solve the chief problem; but, unfortunately, each factor proves to be a problem in itself. Nevertheless there are here, and there, some areas of solid ground on which we may plant our footsteps; some islands in the ocean of doubt that surrounds these problems. For example, some of the stocks have detached members located at quite distant points from the main group. These, we may reasonably suppose, as in the case of southern members of the Athabaskan family, broke away from the parent hive and migrated in the direction of the localities they were found occupying.

Linguists have determined, with sufficient certainty to receive the general acceptance of scholars, that the Cherokees, who, when first encountered by the whites, occupied their well-known seats in western North Carolina and adjoining sections of Tennessee and Georgia, are an offshot of the Iroquoian family. As the home of this family was in the region about Lake Ontario, the reasonable presumption is that this offshot emigrated southward. Of course it is possible that the location of the parent group might have been quite distant from that named, when the separation took place. It is even supposable, though seemingly very improbable, that the main body moved from the ancient home, leaving behind this fragment. But we must remind the reader that the very common opinion that the Indian stocks and tribes were roving, wandering bodies of nomads is erroneous. The following remarks by Maj. J. W. Powell, in the Seventh Annual Report of the Bureau of Ethnology, referring to the linguistic map, are so applicable here that we quote them in his own words:

"In the first place, the linguistic map, based as it is on the earliest evidence obtainable, itself offers conclusive proof, not only that the Indian tribes were in the main sedentary at the time history first records their position, but that they had been sedentary for a very long period. In order that this may be made plain, it should be clearly understood, as stated above, that each of the colors or patterns upon the map indicates a distinct linguistic family. It will be noticed that the colors representing the several families are usually in single bodies, *i. e.*, that they represent continuous areas, and that with some exceptions the same color is not scattered here and there over the map in small spots. Yet precisely this last state of things is what would be expected had the tribes representing the families been nomadic to a marked degree. If nomadic tribes occupied North America, instead of spreading out each from a common center, as the colors show, that the tribes composing the several families actually did, they would have been dispersed here and there over the whole face of the country. That they are not so dispersed is considered proof that in the main they were sedentary. It has been stated above that more

or less extensive migrations of some tribes over the country had taken place prior to European occupancy. This fact is disclosed by a glance at the present map. The great Athabaskan family, for instance, occupying the larger part of British America, is known from linguistic evidence to have sent off colonies into Oregon (Wilopah, Tlatskanai, Coquille), California (Smith River tribes, Kenesti or Wailakki tribes, Hupa), and Arizona and New Mexico (Apache, Navajo). How long before European occupancy of this country these migrations took place cannot be told, but in the case of most of them it was undoubtedly many years. By the test of language it is seen that the great Siouan family, which we have come to look upon as almost exclusively western, had one offshot in Virginia (Tutelo), another in North and South Carolina (Catawba), and a third in Mississippi (Biloxi)."

Though we may not be able to trace the entire route of the Cherokees, the evidence as to the general direction, and a part of the course is deemed sufficient for general acceptance. Haywood states, in his "Natural and Aboriginal History of Tennessee," that they "were firmly established on the Tennessee river or Hogohega (the Holston) before the year 1650, and had dominion over all the country on the east side of the Alleghany Mountains, which includes the headwaters of the Yaden, Catawba, Broad River, and the headwaters of the Savannah." About a hundred and ten years previous to the date given by Haywood, the expedition under DeSoto encountered some members of the tribe in the vicinity of the headwaters of the Savannah river. In DeLisle's maps of 1700 and 1712, Cherokee villages are located on the extreme headwaters of Holston and Clinch rivers, Haywood states that they formerly had temporary settlements on New River, and also that they "had an oration in which was contained the history of their migrations which were lengthy. This related that they came from the upper part of the Ohio, where they erected the mounds on Grave Creek," etc.

That there is a substantial basis of truth in this tradition is now generally admitted. This admission, however, is not based entirely on this tradition, but in part on the fact that it seems to be an echo of the Delaware tradition given by Heckewelder, and in the "Bark Record" or "Walum Olum," relating to their migrations and contact with the Talegewi, or Talegega, now identified with the Cherokees (Tsaleki). Bishop Etwein states that the last Cherokees were not driven from the upper Ohio until about the year 1700. The mound testimony, so far as it can be interpreted with reasonable certainty, agrees with these traditions and indicates that the people of this tribe, who are now known to have been mound builders, were the authors of some of the ancient works of Ohio and the Kanawha Valley. The evidence on this point has been somewhat fully presented by the author in the "Twelfth Annual Report of the Bureau of Ethnology," and a paper entitled "The Cherokees

in Pre-Columbian Times,³⁹ to which the reader wishing to examine the details, is referred.

These facts are sufficient to justify the conclusion that the people of this tribe migrated, in prehistoric times, from some locality in the north, or northwest, the region of the upper Ohio being one of the stopping points on the way. This tribe, however, was not the only member of the Iroquoian family which had left the parent group and wandered southward. Three other tribes, the Nottaway, Meherrin, and Túscaroras, formerly located at different points in Virginia and North Carolina, have been identified by their language and other evidence as members of the same stock. These, however, as their language and customs indicate, were later offshoots than the Cherokees, their separation from the parent stem being evidently of comparatively recent date. As the point with which we are at present chiefly interested is the fact, not disputed by any authority, that these tribes had migrated at some period in the past from some more northern locality, it is unnecessary to give the evidence here.

As linguists have generally accepted the conclusion that the Catawba of South Carolina, the Saponi and Tutelo of Virginia and North Carolina, the Biloxi of Mississippi and Quapaw of Arkansas are all members of the great Siouan family, we have, in the fact of their widely separate localities, positive evidence of migration. The question then for us to determine is, the direction in which the several colonies moved to reach their respective localities. On this point it may be stated, without entering into details here, that there is a general agreement among the more recent authorities that all of these tribes moved southward, or southeast and southwest from some point as far north at least as the Ohio. It is also generally agreed that the spread of the Algonquins over Virginia and parts of North Carolina was a movement southward; and there are few, if any, ethnologists who will deny that a part, at least, of this stock came into the territory of the United States from the north sides of the lakes, or St. Lawrence, thus showing a general southward trend.

Although no allusion has been made to the movements of the Muskoki family, whose traditions point to the west as their original home, yet the facts mentioned are sufficient to show that as a rule, which had very few, if any, exceptions previous to disturbance by European settlement, the movements of detached tribes was southward; in fact that all movements on relatively north and south lines were southward.

In the argument advanced no reference, to the question of movements eastward or westward has been made, for the reason that the special object in view has been to show that, following the evidence and general conclusions of authorities, we must decide against any theory placing the point of original entry on our southern border. In other words that the theory advanced by Dr. Alex. Winchell and possibly some other

writers, that the Indians east of the Mississippi were derived from immigrants from the tropics who entered the area through the Florida peninsula, cannot be maintained. Also that, unless the Muskoki and the minor stocks of the Gulf States form exceptions, the aboriginal population of the Atlantic section was not the result of immigration northward from the Gulf coast. In other words that we must look to the north, north-west, or northeast for the point, or line of original entry. It is not denied that evidences of the presence, or influence of a more southern people, especially the Caribs and possibly the Mayas are found in the Florida peninsula, but there are no facts to justify the theory advanced by Dr. Winchell.

It is doubtful whether an entirely satisfactory conclusion in regard to the prehistoric migrations of the Muskoki and other tribes of the Gulf States can be reached with the data which have been obtained. It may be stated, however, that the opinion generally accepted by authors who have referred to this subject, is, that the movement of these tribes was from the west, eastward. This accords with the general tenor of the traditions of these Indians. Mr. Gatschet, who has made a somewhat thorough study of the subject, in his "Migration Legend of the Creek Indians," remarks, that "A notion constantly recurring in the Muskoki migrations is, that they journeyed east." In the Choctaw tradition it is asserted that they emigrated from "a distant country in the west," the Creeks being in front and they in the rear. "This story," remarks Mr. Gatschet, "does not mention any crossing by the Cha'hta of the turbid waters of the mighty Mississippi"; nevertheless, it would seem that a "distant country in the west," in relation to their historic seat, chiefly in the State of Mississippi, must lie west of the great river.

The Chickasa tradition was to the same effect, and as usually given, appears to refer to the region west of the Mississippi. Drake ("Indians of North America") says, "The Chickasaws are supposed to have come from the west of the Mississippi," and it is well known that their war parties were often on that side of the river. The migration legend as recounted to Col. Benjamin Hawkins, starts the journey eastward from the forks of the Red river, west of the Mississippi, thus: "There are in the forks of Red river or U-itchati, west of Mississippi river, U-i ukufki, two mounds of earth. At this place the Kasi'hta, Kawita and Chicasa found themselves and were at a loss for fire," etc. (Gatschet). Drake alludes to a notion that the Creeks came from the south or southwest, probably an echo of the extravagant story by Milfort that they came from north-western Mexico in comparatively modern times.

Other tradition, or rather versions of the same traditions, to the same effect might be presented. but sufficient has been given to show that the prevailing and almost universal belief of these Indians was that they came from the west. Was this west beyond the "father of waters?" Mr. Gatschet

says: "In the minds of many of our readers it will ever remain doubtful that the Creek tribes immigrated into the territories of the Eastern Gulf States by crossing the Mississippi river. But there is at least one fact which goes to show that the settling of the Creeks proceeded from west to east and south-east. The oldest immigration to Chatahuchi river is that of the Kasihta and Kawita tribes, both of whom, as our legend shows, found the Kusa and the Apalatchukla with their connections, *in situ*, probably the Abika also."

This writer is not inclined to accept the theory that the former home of these southern tribes was west of the lower Mississippi. Among other considerations, he says: "Some reasons which strongly militate in favor of the theory that the tribes of the Maskoki race never crossed the Mississippi river from west to east, are deducible from the phonology and morphology of their languages. These reasons do not prove the fact with the cogency of mathematic deduction, but they are persuasive upon the principle of ethnic analogy." These, briefly summarized, are as follows: The presence of *f* and *l* (palatalized *l*) and absence of *r* in the language east of the river, and the absence of *f* and *l* from, and presence of *r* in, the languages immediately west of the river; the difference in respect to the frequency of nasalization; and that of reduplication for inflectional purposes. What weight these reasons have in the discussion must be left for linguists to decide, the object we have in view at this stage is accomplished if the reader has been induced to look northward for the earlier locality of the Muskoki family. Dr. Brinton says: "Their legends referred to the west and northwest as the direction whence their ancestors had wandered." He prefixes the statement, however, that "The remains of a few other stocks in the eastern portion of this area, indicate that the Muskokis were not its original occupants, and this was also their own opinion."

PART II.

THEORY OF EASTERN ORIGIN.

Of course the object in view in this study of the movements of population in that part of the United States south of the lakes, is to ascertain whether we can obtain any pointers looking toward the place of original entry. We shall take for granted that the evidence adduced is sufficient to eliminate from the discussion any southern lines of entrance. Before following up the subject it is necessary to refer to two opposing views which, in most cases, furnish the key to the conclusions of the different authorities on the minor points.

As is well known, the prevailing opinion has been that the Indians entered this region from the northwest. So general was this that it is unnecessary to quote authorities. The other view is that the place of entrance is to be found on the eastern

coast, somewhere in the region of the mouth of the St. Lawrence river. As Dr. Horatio Hale may be taken as the leading advocate of this theory, we present his views as given by himself in his paper entitled "Indian Migrations," in the *American Antiquarian* 1883.

"It will be noticed that the evidence of language, and to some extent that of tradition, leads to the conclusion that the course of migration of the Indian tribes has been from the Atlantic coast westward and southward. The Huron-Iroquois tribes had their pristine seat on the lower St. Lawrence. The traditions of the Algonkins seem to point to Hudson's Bay and the coast of Labrador. The Dakota stock had its oldest branch east of the Alleghanies, and possibly (if the Catawba nation shall be proved to be of that stock), on the Carolina coast. Philologists are well aware that there is nothing in the language of the American Indians to favor the conjecture (for it is nothing else), which derives the race from eastern Asia. But in western Europe one community is known to exist, speaking a language which, in its general structure, manifests a near likeness to the Indian tongues. Alone of all the races of the old continent the Basques or Euskarians of northern Spain and southwestern France have a speech of that highly complex and polysynthetic character which distinguishes the American languages. There is not, indeed, any such positive similarity in words or grammar as would prove a direct affiliation. The likeness is merely in the general cast and mould of speech; but this likeness is so marked as to have awakened much attention. If the scholars who have noticed it, had been aware of the facts now adduced, with regard to the course of migration on this continent, they would probably have been led to the conclusion that this similarity in the type of speech was an evidence of the unity of race. There seems reason to believe that Europe,—at least in its southern and western portions,—was occupied in early times by a race having many of the characteristics, physical and mental, of the American aborigines. The evidences which lead to this conclusion are well set forth in Dr. Dawson's recent work on 'Fossil Man.'"

It is unnecessary to quote further, as what is given makes clear the writer's theory; the eastern coast somewhere in the vicinity of the Gulf of St. Lawrence being, apparently, the supposed landing point of the ancient adventurers, or castaways. The argument advanced to sustain this theory will be noticed a little further on. Dr. D. G. Brinton places the point of entry, indefinitely, somewhere on the eastern coast, apparently the northeast. He brings the first immigrants from western Europe over a land bridge assumed to have been in existence during, or at the close of the glacial epoch. This bridge is supposed to have connected western Europe, Iceland, and southern Greenland, a theory also advocated by Mr. A. H. Keane in his "Ethnology." He (Dr. Brinton) places the "area of characterization," or of the formation of the American

Race in what is now the eastern half of the United States. Mr. James Mooney, in his excellent paper entitled "The Siouan Tribes of the East," apparently adopts substantially the theory advanced by Dr. Hale. At least his arguments in regard to the movements of tribes and stocks shows that he makes the starting point of some of the stocks somewhere east of the Alleghany Mountains and north of the Potomac. Whether he intends to include the Muskokian and other stocks of the Gulf States in this movement is doubtful, as he remarks, "The Muskogean tribes all claim to have come into the gulf states from beyond the Mississippi, and tradition is clearest among those of them—the Choctaw and Chickasaw—who may be supposed to have crossed last. As they advanced, they came at last into collision with the Timuquarian and Uchean tribes of Florida and Georgia, and then began the long struggle which ended only with the destruction of the Timukua and the incorporation by the Creek, within the historic period, of the last of the Uchi, leaving the Muskogean race supreme from Florida cape to the Combahee river in South Carolina."

Speaking of the general movement of the Siouan tribes, he says: "The inference would be that the Muskogean tribes were already established in the southern region, where we have always known them, before the Siouan tribes had fairly left the Mississippi. In accordance with the Osage (Siouan tribe) tradition, the emigrant tribes, after crossing the mountains (Alleghanies), probably followed down the valleys of New river and the Big Sandy to the Ohio, descended the latter to its mouth, and there separated, a part going up the Mississippi and Missouri, the others continuing their course southward and southwestward. In their slow march toward the setting sun, the Kwapa probably brought up the rear, as their name lingered longest in the traditions of the Ohio tribes, and they were yet in the vicinity of that stream when encountered by De Soto." In regard to the Algonquins, he says: "Traditional and historic evidence point out as the cradle of the Algonquin race the coast region lying between St. Lawrence river and Chesapeake Bay." These statements and quotations will suffice to indicate the standpoint of these three writers; to whom we shall have frequent occasion to refer.

The evidence on which Dr. Hale bases his conclusion is almost wholly linguistic, and in substance is as follows: In a group of languages belonging to one stock, that dialect which shows least evidence of "phonetic decay" is assumed to be the oldest, or the nearest representative of the primary stem; those showing evidence of phonetic decay are to be considered the younger dialects, the one in which this is carried to the greatest extent being the most recent. Applying this to the Huron-Iroquois family he demonstrates, to his own satisfaction, that the process of differentiation was as follows, commencing with the oldest and going to the youngest: Wyandot, Mohawk, Oneida, Onondaga, Cayuga and Seneca; the Tusca-

rora being placed side by side with the Mohawk; and the Cherokee given a position near to, or parallel with, the oldest. As the descent from the Mohawk, marks, geographically, a western extension, he assumes that this is evidence of a gradual western movement. Applying the same rule to the languages of the Siouan tribes, he concludes that the western tribes of the family migrated from the east. The same result is reached in regard to the Algonquin tribes. He brings to his aid, of course, such traditions and historical data as appear to have a bearing upon the subject, but his chief reliance is on the evidence of phonetic decay, as we follow the members of the various groups west and south.

If it could be shown by a satisfactory array of evidence, or with a reasonable degree of probability, that there was one landing point of original immigrants on the eastern coast of North America, leaving open the question of influx on the west side, the great question of the origin of the original population of the continent would be relieved of some of its troublesome features. Do the arguments presented by the advocates of this theory give it sufficient support to entitle it to acceptance, or to be ranked among those theories considered most probable? Our reason for a brief discussion of the arguments advanced to support this theory has no reference to the general question of the origin of the aborigines, but is simply for the purpose of clearing our way to the further examination of the movements of tribes and stocks in the Atlantic section.

As the theory advanced by Dr. Brinton and Mr. Keane is based upon the supposition that America was peopled during, or at the close of the glacial epoch, a theory which as yet is without sufficient support to justify its acceptance, we may dismiss it from consideration. Aside from this, it involves such remarkable, and exceedingly doubtful physical conditions as to place it wholly beyond the boundary of probability.

Dr. Hale's argument relates chiefly to the distribution westward, from a given point on the east coast in the vicinity of the mouth of the St. Lawrence river. How the first immigrants reached this locality from Europe,—the place from which he brings them,—is a question he dismisses with the following brief suggestions:

"If communities resembling the Iroquois and the Caribs once inhabited the British islands and the western coast of the adjacent continent, we may be sure that their fleets of large canoes, such as have been exhumed from the peat deposits and ancient river beds of Ireland, Scotland and France, swarmed along all the shores and estuaries of that region. Accident, or adventure may easily have carried some of them across the Atlantic, not merely one, but in many successive emigrations from different parts of western Europe. The distance is less than that which the canoes of the Polynesians were accustomed to traverse. The derivation of the American population from this source presents no serious improbability whatever."

That this theory is intended to embrace the entire aboriginal population of America, is inferred from the last sentence in the above quotation, and from the following statement in the previous quotation: "Philologists are well aware that there is nothing in the languages of the American Indians to favor the conjecture (for it is nothing else), which derives the race from eastern Asia." Whether, or not, any portion of the aborigines was derived from the Basques or people of Europe does not concern us at present, it is the argument Dr. Hale advances in support of the theory which we propose to examine briefly. Knowing his eminent position as a linguist, his linguistic data are accepted without question; it is the application made of them and the conclusion based thereon, that we are not inclined to accept as satisfactory.

It is not supposable that Dr. Hale intended we should infer that he applied the rule in regard to "phonetic decay" to the immense number of stocks and tribes scattered over America from the St. Lawrence to Patagonia, which must have been developed from the comparatively few adventurers who landed on the northeast coast of North America, as this would be manifestly absurd. His argument appears to be as follows: As the law of "phonetic decay" when applied to the Huron-Iroquois, Siouan and Algonquian tribes, shows there has been a gradual movement westward of the members of these families, and the lines of migration extended backward converge upon the lower St. Lawrence, we see therefrom the general trend of migration and the initial point. And as we reach the shore on this point, we must look across the ocean for the original home of the immigrants. This appears to be a fair statement of his argument. The objection to it is that, admitting to the fullest degree his evidence and the claims he bases thereon in regard to the westward movement and the initial point thereof, he does not gain thereby any support for his deduction that this initial point was the landing place of the original immigrants.

Suppose the original immigrants from which the population of America has been developed, did, in fact, land on the northeast coast near the mouth of the St. Lawrence, is there any valid reason for believing that the two or three stocks encountered in that region by Jacques Cartier and other early European navigators, were remnants, direct descendants of the original stock which landed there? Are not the chances a hundred to one, yes a thousand to one, that this primary landing place has been occupied by successive waves of population, descendants in the tenth, twentieth or hundredth degree from the original immigrants? If so, the argument amounts to nothing, for, admitting its full claim, it only shows that this region has been a place of differentiation and a point of dispersion of the few stocks named, which are known to have occupied the era. If the flow of the stream has been once completely interrupted in the past, the chain on which Dr.

Hale's deduction hangs is broken. In other words, if the direct and local descendants of the supposed Basque immigrants have been driven from this initial point, the Iroquois and Algonquins must have come to the place from somewhere else in America, and may as well be, so far as this argument is concerned, descendants of irruptive hordes which had entered the continent by way of Behrings Strait as of the Basques. Are we to infer that the Iroquois are the direct local descendants of the Basques who reached this region at some far distant period of the past, and that out of their loins, so to speak, have been developed the numerous aboriginal tribes of America? If not, then what bearing does the fact, if proven, that there has been a westward movement of certain stocks in that section, have on the question of the point of original entry? If the theory that the Basques were the original peoplers of this continent is ever rendered plausible, it must be by other evidence than this.

Suppose we limit the supposition to the origin of the Indians of the Atlantic section; are there any stronger reasons for accepting it? It is not presumable that there was a continuous, or even recurrent influx of Basques down to comparatively recent times, as this would be shown by the language of the Indians of that region. The inflowing stream must have ceased ages ago. If so, the same difficulty confronts us as that above mentioned, as it is to the utmost degree improbable that the mother stock retained possession of the original landing place through all the centuries, the families and tribes of the section were in the process of development. If not, the chain is broken and the argument falls to the ground. If the supposition the Eskimo formerly extended southward along the eastern coast to the mouth of the Delaware, and still held that region as far south as Massachusetts Bay at the time of the Norsemen's visit, be accepted, it would render Dr. Hale's theory improbable, unless the people of this tribe were the immediate descendants of the Basques. Even in this case it is apparent the chain must have broken and the argument would fail. Mr. Keane speaks of the supposed affinity of the Basque and American languages as "purely fanciful." "The Basque," he adds, "has no affinities, beyond that due to loan words, to any other group in the New or Old World, unless indeed, G. von der Gabelentz can be said to have established a remote kinship with the Berber of North Africa." However, we must remember that Dr. Hale only speaks of general resemblance, and not true affinity.

It should be borne in mind that the author is not contending against the theory that the Atlantic section was peopled by immigrants from Europe, nor against the supposition that the landing place of these immigrants was on the northeast coast; what he has tried to show is, that Dr. Hale's evidence is insufficient; that his argument is faulty. That a general trend of migration in one direction throughout the Atlantic section,

which followed backwards, converges toward a given locality, is evidence that this locality was probably an initial point or place of entry, is admitted. The author's position is that Dr. Hale's evidence, even though admitted, is wholly insufficient to maintain his theory, or even to show the general trend of migration.

Admitting the correctness of his law of phonetic decadence, the differentiation of the Algonquin stock must, according to the generally accepted conclusion, have commenced with the Crees, the most northern member of the group. According to his own genealogical arrangement of the Iroquoian family, the Hurons, located on the western border of the group, formed the parent stem. The inference would therefore be that primary movemants of the members of these stocks were toward the south and east.

The Siouan tribes present a problem difficult to reconcile to his law of phonetic decadence and point of dispersion. If the Catawbas, Tuteloes and Saponis of Carolina are the oldest members of the stock and their descendants migrated to the west, why does he, as well as Mr. Mooney, make the region of the Ohio the point of dispersion? Why not the southeast where they were first encountered by the whites? The tradition in regard to the residence of some of the tribes on the Ohio will be fully as applicable to this supposition as to the other; in fact more so. The bias of preconceived theory is evident here, the movements must conform to the supposition that the initial point was on the northeast coast. though it necessitates bringing the parent Sioux to the Ohio either by migration or process of development, and scattering them thence southeast, northwest, west and southwest, those going southeast being the supposed parents of those going west and southwest.

Mr. Mooney's theory in regard to the pristine home of the Algonquians in the east, results in his effort to make theory agree with tradition, in carrying them completely round the circle. His statement in regard to them is as follows:

"Within this period traditional and historical evidence point out as the cradle of the Algonquian race the coast region lying between Saint Lawrence river and Chesapeake bay. The tribes occupying this central position—the Abnaki, the Mohegan, the Lenape, and the Nanticoke—regarded themselves as constituting one people, and were conceded by others to be the "grandfathers," or progenitors of the stock. From here, as their numbers increased, they sent colonies northward along the coast, driving back the Eskimo, and probably the Beothuk, westward and northwestward up the valley of the Saint Lawrence and the lakes, and southward to occupy the coast of Virginia and a part of Carolina, where, in conjunction with the Iroquoian tribes, they expelled the Cherokee from the upper waters of the Ohio and compelled them to take refuge in the mountain fastnesses on the south. Most of these movements,

although the subject of well supported tradition, belong to pre-historic times, but the advance of the Algonquian tribes into the northwest is comparatively modern."

It is somewhat difficult to understand that portion of his statement where he says they sent colonies "southward to occupy the coast of Virginia and part of Carolina, where in conjunction with the Iroquoian tribes they expelled the Cherokee from the upper waters of the Ohio." As the tradition as given by Heckewelder and in the "Bark Record" shows clearly that the Lenape after driving out the Cherokees proceeded eastward to the coast, it follows, according to Mr. Mooney's theory, that they must have traveled round a complete circle.

CORRESPONDENCE.

INSCRIBED ROCKS — WISCONSIN.

Editor AMERICAN ANTIQUARIAN:

I wish to call the attention of antiquarians to a series of hieroglyphics, or inscriptions, in Oconto County, Wis. On south side of Section 24, Town 31, Range 16, E. 4 p. m., is a remarkable rock ledge, granite, in shape a fair horse-shoe, with the open end to west; sides precipitous, and from 75 to 100 feet high, highest point on east; on closed end top glacier marked; a flat planed surface about midway of north arm of horse-shoe, about 20 feet square, on which are the characters here given:

[inscription here]

Since writing you, I have to report: June 12, in company with Col. W. S. Wovel, another trip was made to the town of Armstrong, near Breed P. O., Oconto County. The purported inscription, or hieroglyphics, were carefully studied. Owing to the defaced or worn condition, no impression or tracing was deemed advisable. The granite platform on which they are cut or chiseled, is about 50 feet above surrounding country, and the marks are along a very straight quartz vein, about half an inch across, and extending nearly north and south across the ledge on the northern arm of the horse-shoe heretofore described. This vein is the center line of the characters, as if it were a ruled line on which they had been cut.

The appearance of the inscription is as if the markings had been deeply cut, then ground off so as to nearly obliterate them, then weathering out in such a manner that perpendicular strokes were like a figure 8; the quartz center line being harder than the granite, has worn away much less. The characters are each about 6 inches in height, quite uniform, and extend a distance of some 8 or 9 feet even to edge of ledge. The surface of the ledge has been fire-swept, and this has caused the rock to become shelly and rotten.

The first series are nearly as below :

Careful search was rewarded by finding another series on the south side of the ledge on same north arm of horse-shoe, and some distance to south-east. These seemed much older, or, at least, a greater degree of obliteration prevailed, and are like the first series, along a center line of quartz vein, very regularly spaced, and in height like the first described, and are something like the following :

I give the figure 8 appearance, caused by unequal wearing away of quartz and granite, which is much greater than in series first described, and is to a depth of $\frac{3}{4}$ of an inch below the surface of a narrow $\frac{1}{2}$ -inch quartz vein, which is itself cut or chiseled to a depth of $\frac{3}{4}$ of an inch below surface of granite ledge.

The characters given here of first series are something different from those I first sent you, for the reason that some of the marks on second visit were not wholly identified as man's handiwork.

That this is human carving, and that it was done many hundred years ago, there seems no doubt whatever ; but whether as an inscription or as a sign record, or possibly some way connected with that quartz vein, I cannot say.

It is certainly remarkable for its age if nothing more, for it shows that civilized men, with tools capable of chiseling the hard granite, and doing it well, were there long before Columbus visited America.

If any one desires to visit and see for themselves, let them go to Breed P. O., then inquire for Charles White's farm in town of Armstrong, and he will show the place.

Yours truly,

SHAWANO, Wis., July 12, 1896.

C. E. BREED.

MAN IN THE GLACIAL PERIOD.

TO THE EDITOR OF THE ANTIQUARIAN :—

I enclose a chart of geological history, prepared by Prof. J. S. Newberry. You will see from it that the Pliocene and all rocks between it and the Carboniferous are wanting in Ohio. This is because since the Carboniferous era Ohio was dry land. The Glacial period prolonged the Pliocene, and I think embraced the whole of this state.

Land stood at a much higher level than now, as is shown by the old channels of drainage made below the sea level but now filled with the drift. My own idea of the Glacial epoch is, that it was a very slow encroachment of ice from the north—such as would now occur if the ice belt around the pole were pushed slowly from year to year until it reached the middle of the United States and then as gradually receded.

The country here was covered with forests before the Glacial period and may have been occupied as Europe was imme-

diately after the Glacial period. The question which I do not regard as settled is, Did man occupy before the Glacial period?

Our lakes are mainly the results of glacial action. The glaciers would destroy all cave-dwellings, so that none of the cave remains can be glacial. I have yet to learn of human relics unmistakably found in unmodified glacial drift, but if as seems probable man followed the retreating glaciers toward the north, and he occupied the earth during the glacial epoch his handiwork ought to be found in the Tertiary beds.

This is the problem to be solved. In regard to the Mound-builders building upon high grounds let me call your attention to Bancroft's, vol. 4, pages 431-3, 440, 449, for description of enclosures at the *junction of streams* in Central America in which dwellings and temples were placed on high natural ridges projecting into the valleys, resembling in this respect the Mound-builders in Ohio.

In reference to the relation of neolithic to paleolithic forms, it could be taken as a general principle that the shapes of old implements and utensils will be retained when the articles are made of a newer and better material, and when the same material is used and a better finish is reached. To illustrate: The Greeks and Romans inherited the forms of their spear-heads from the stone age and retained them into the iron age, as is proved from the fact that the barbs on some of them are of no use, and would be really a disadvantage. We need to trace the genetic relation between the weapons and implements of the stone age and modern ones, and learn if we can the true lines of descent.

This has a bearing, also, on the glacial age in that the neolithic relics would naturally have the same shapes as the paleolithic. It would be difficult to draw the lines between them. There is another fact which has a bearing—the discovery of skulls shows that there was a difference between the northern tribes and the southern tribes.

The northern tribes were flesh eaters and hunters, and their advent was evidently later than the glacial period.

The southern tribes were agriculturists or grain eaters at a very early period. To illustrate: The front teeth of the Chatanooga skull which were found in the center of a mound and was very old, have flat grinding surfaces, no cutting edges, and shut squarely upon each other. In other words, there are double teeth all around.

Mr. Bancroft mentions a place in Central America where there was a burial mound, in which all the skulls had double front teeth.

For some time I have supposed that the true Mound-builders of the Mississippi valley, that is the older race of Mound-builders, had such teeth, and probably were not flesh eaters to any great extent.

Respectfully yours,

M. C. REED.

STONY CREEK
BRIDGE
290 FT. HIGH
SELKIRKS



Canadian Pacific Railway.



DEVILS HEAD CANYON.
BANFF.



THE BOW RIVER
IN WINTER.
BANFF.

EDITORIAL.*

SOUTH AFRICAN RUINS.

It would seem that, at some far distant date, a people more civilized than any of the present Kafir tribes had penetrated into the region we now call Mashonaland, and had maintained itself there for a considerable period. Remains of gold workings are found in many parts of that country, and even as far as the southwestern part of Matebeleland—remains which show that mining must have been carried on, by primitive methods, no doubt, but still upon a scale larger than we can well deem within the capabilities of the Kafir tribes as we now see them. There are, moreover, in these regions, and usually not far from some old gold-working, pieces of ancient buildings executed with a neatness and finish, as well as with an attempt at artistic effect, which are entirely absent from the rough walls, sometimes of loose stones, sometimes plastered with mud, which the Kafirs build to-day.

These old buildings are, with one exception, bits of wall inclosing forts or residences. They are constructed of small blocks of granite of the country, carefully trimmed to be of one size, and are usually ornamented with a simple pattern, such as the so-called "herringbone" pattern. The one exception is to be found in the ruins of Zimbabwe, in southern Mashonaland. Here a wall thirty feet high, and from six to twelve or fourteen feet thick, incloses a large elliptical space, filled with other buildings, some of which apparently were intended for the purposes of worship. There are no inscriptions of any kind, and few objects, except some rudely carved heads of birds, to supply any indication as to the ethnological affinities of the people who erected this building, or as to the nature of their worship. Such indications as we have, however, suggest that it was some form of nature worship, including the worship of the sun. We know from other sources (including the Egyptian monuments and the Old Testament) that there was from very early times a trade between the Red Sea and some part of East Africa; and as we know also that the worship of natural forces and of the sun prevailed among the early Semites, the view that the builders of Zimbabwe were of Arab or some other Semitic stock, is at least highly plausible.

Two things are quite clear to every one who examines the ruins, and compares them with the smaller fragments of ancient buildings already mentioned. Those who built Zimbabwe were a race much superior to the Bantu tribes, whose mud huts are now to be found not far from these still strong and solid walls; and those other remains scattered through the country were either the work of the same superior race, or, at any rate, were built in imitation of their style and under the influence they had left. But whether this race was driven out, or peaceably withdrew, or became by degrees absorbed and lost in the surrounding Bantu population, we have no data for conjecture. If they came from Arabia they must have come more than twelve centuries ago, before the days of Mohammed; for they were evidently not Mussulmans, and it is just as easy to suppose that they came in the days of Solomon, fifteen centuries earlier.—[**Impressions of South Africa*," by James Bryce, M. P., in the *June Century*.

DR. DORPFELD'S LECTURES.

The celebrated archæologist, Dr. Dorpfeld, has just closed a series of six lectures at the Fogg Museum, Harvard, on "The Site of Ancient Troy." The lectures were given in German, but the profuse illustrations by stereopticon offered attractions even to those not understanding the language. Dr. Dorpfeld was long in close association with Dr. Schliemann, and he is a contributor to more magazines, the author of more books, and the bearer

* Dr. Winslow's notes on Egyptology were miscarried and came too late for this number, but will appear in the January number.

of more degrees and titles and honors than can well be enumerated. The *Transcript* says of him: "Among the discoveries made by Dr. Dorpfeld, not noted in his books, are the subterranean aqueduct which carried water to the reservoir of Athens; that sanctuary of Dionysos where was celebrated the Anthesteria, and of which Thucydides expressly mentions the great antiquity. Dr. Dorpfeld has also excavated extensively near the Areopagus, and about the Acropolis in Athens. He has discovered mosaics, wall paintings, sculptures, coins and terra cotta designs and vases in large numbers and of great importance. His discoveries on the site of Athens have been hailed with enthusiasm by archæologists the world over. He is now preparing a work on "The Theater of Dionysos." He also conducts personally excursions in the Peloponnesus and the Greek Islands."

In Dr. Dorpfeld's first lecture he alluded to the various sites that scholars had claimed for Troy, and he showed by maps and photographs the nine strata, one over the other, of the nine different settlements that had been destroyed. "In the upper stratum Roman buildings were uncovered, including a stately temple of Athene, built of marble, and three theaters, and many colonnades and houses. Countless marble inscriptions record that this city was called Ilium, and that some of its buildings were erected by the Roman Emperors. Under these Roman buildings, as the excavations were continued into the lower strata, were found simple houses built of smaller stones, whose age is determined by the character of the pottery found in and about them. These are beyond question the houses of the little city visited by Alexander the Great and by Xerxes."

Under these were found the ruins of a stately city with towers and gates and walls of defense. There were blocks of stone, from the walls, fifteen feet in width. Many stately buildings were found almost entire. And here were found fragments of the antique pottery which was found at Tiryns and Mycenæ—pottery that is known by archæologists to belong to a period of from 1,000 to 1,500 years before Christ. Still farther beneath these ruins were five prehistoric settlements which antedates fully 2,000 years before Christ. One of these settlements was of paramount importance. In it was found a massive citadel of domes and towers, which Dr. Schliemann believed to have been the citadel of Priam, and in it—to prove the truth of this theory—were found the celebrated gold articles known as the "treasure of Priam." Dr. Dorpfeld believes that this discovery supports the intimation of Homer that Troy had once before been destroyed, and that this citadel antedates the Trojan war.

AGE OF THE DOLMENS.

A paper was read at the meeting of the French Association for the Advancement of Science, held at Turin, by Prof. Montelius of Stockholm on the distribution of dolmens. This type of tomb, he said, is of Oriental origin, but it has been transplanted even so far as to Scandinavia. The Scandinavian dolmens date from an epoch much earlier than the twentieth century B. C., and we have in these monuments indications of an influence which the East exercised upon Europe at a very early date. If the Scandinavian dolmens were so early, the Oriental dolmens must be at least one or two thousand years earlier still. This is confirmed by the fact that the chambers in the Egyptian pyramids are constructed exactly like dolmens, with the single difference that the stones of which they are built are cut and polished. It is not to one people alone that dolmens belong. An Aryan people was living in Scandinavia, while the dolmens of Syria could not have been built by Aryans. It was, then, a question of influence rather than of migration. Prof. Montelius spoke also of other traces of Oriental influence on the north of Europe in the times which immediately succeeded the dolmen epoch. Throughout this period, communications between the east and the north of Europe followed along the coast of Africa to the Spanish peninsula. It was evidently easier to go along the coast than to cross the sea. Only at a much more recent time did the influence of eastern civilization take another route, traversing first the Mediterranean and then the European continent.

TAOS ON THE RIO GRANDE.

The native inhabitants in the valley of the Rio Grande number about 7,000 in all, distributed between fourteen villages, the most interesting of which is one called Taos, where almost all the inhabitants are lodged in two great houses. The internal economy of these houses is, as may be supposed, curious enough, and might, perhaps, furnish some valuable hints to the organizer and reformer of common lodging houses and artisans' dwellings. The structures are built of stone, and have five stories. They are designed so as to form a sort of pyramid, each story being smaller than the one below it, and the roof thus mounting as it were, in terraces to the top. The access to them is by means of ladders planted against the outside, and thence through a hole in the roof. There must be some difficulty even to a sober man in finding his way safely to the rooms, considering that the only light which they enjoy is derived from an aperture about the size of a very small plate pierced in the ceiling or side of the house. To compensate for this niggardly allowance of sunlight the walls of the departments are painted white, but the institution of windows is unknown, and if introduced in favor of the exterior chambers would no doubt be resented by those occupying the interior. It is said that each of the two houses in Taos is capable of accommodating 400 persons, and though the number of rooms is not given, it is probably not inferior to that of the largest East End lodging house. The inhabitants are hospitable, and make no difficulty about admitting strangers to see their houses, or, at least, every part of them except the inmost chamber of all, where is the grand *estufa*, in which the sacred fire of Montezuma is still kept perpetually alight. Besides this, which may be called the modern aspect of the Taas village, there is an antiquarian interest about the district, for it contains some historic relics dating at least as far back as the time of Fernando Cortez. Among them are a number of sculptures on dark red stone, representing wild bulls, snakes, rats and other animals, the meaning of which, whether as hieroglyphics of symbols, has not yet been ascertained.—*N. Y. Times*.

THE PLACE OF THE SKULL OR GOLGOTHA.

Much discussion has taken place in reference to the place of the Crucifixion. A discovery has recently been made, and it seems strange that it had not been made before, of a rock which contains on its perpendicular face, a most remarkable resemblance to a skull, the two eyeless sockets, the overhanging forehead, the lines of the nose, the open mouth, the chin all plainly seen in the rock. It is concave and of the same color as the skull, and looks out from the side of the cliff, a ghastly form. It is situated 200 yards outside "Damascus Gate," on the side of a white limestone knoll about 60 feet high, the contour of which resembles the crown of a head. At the bottom of the cliff is a large garden, and a very ancient well six feet below the surface, the rock-hewn sepulchre of our Lord has been discovered. There is a general consensus of opinion that this is the true site of Golgotha.

HENOTHEISM AMONG THE AINUS.

Rachelor says of the Ainus: "Although the Creator of all things is naturally looked upon as the God of all Gods, he is thought to have brought all things to pass by means of many personal intermediaries, who are all chief in their own, and who have their special sphere and work."

For instance, a person is sick. The people are gathered to pray that the sick one may be healed.

The fire goddess, who is believed to be able to purify the body and heal diseases, is worshipped. Thus for a time she is uppermost in their mind. Again, a man is going out to catch fish. What is more natural than for him to call upon the God of the Weather. This is Henotheism,

BOOK REVIEWS.

Canadian Savage Folk—The Native Tribes of Canada. By John Mac Lean, N. H., Ph. D.; the author of the *Indians of Canada and Illinois*. William Briggs, Toronto, 1896.

This is a book of 641 pages. It is well printed and well illustrated with portraits of Indian camps and graves, stone relics, etc.

It contains descriptions of a number of Indian tribes, with their location and peculiarities mentioned. The author begins with the Sarcees, the most northern tribe of the Athapascans, and gives a portrait of one dressed in modern costume. He turns to the Stoney Indians, a branch of the Great Dakota, identical with the Assiniboines. *Assini* means a stone.

They were formerly resident in Manitoba. They have a sign language and their own system of government. The Nez-Perces, which belong to the Sahaptin family, were "the noblest, the richest and gentlest of the tribes of Oregon." Chief Joseph was a member of this tribe.

The Blackfoot Indians roamed over the Western plains from the Red River to the Rocky Mountains. They have a tradition that they came from the northern portion of the country where "the mud was deep." The moccasins became black, so they were called Blackfeet. They make beautiful stone pipes; have calendars which are kept by notching sticks. They name the months from the operations of nature, "Geese-come," "Big-snow," etc. They practiced picture writing; "the pictures on the lodges express the life of the owner." The Cree Indians form one of the largest tribes of the Algonquin nation. They are divided into sub-tribes.

They formerly had a peculiar way of dividing the hair. They also practiced fire signals and medicine men were numerous among them.

The Sioux Indians are described, and the portrait of Sitting Bull is given.

The Micmacs are also described. These were related to the Beothuks and formerly dwelt on the Eastern coast of Maine.

The Kootenay Indians are chiefly canoe Indians and the Columbia River west of the Blackfoot and Stoney Indians. They are mainly fishermen. They dress in the manner of the prairie Indians, with moccasins, leggings, breeches and buckskin shirt.

The description of these tribes is of a popular character. They are followed by descriptions of relics, amulets, pipes, beads, the most of which have been described in the reports of the Canadian Institute at Toronto.

There is a chapter on Native Religions, in which there is reference to sacred numbers, and the names of the Creator and many other points. There is a chapter upon "Sign Languages," on "Totems," "Wampum Belts" and "Canoes."

The book contains a portrait of the author and many interesting pictures which bring to light the customs and peculiarities of the Indians.

Upon the whole it is the best volume that has been written upon the subject of the "Canadian Indians," and will doubtless meet with a good sale.

European Architecture—A Historical Study. By Russell Sturgis, A. M. Ph. D., F. A. I. A. The Macmillan Company. New York, 1896.

The author of this book defines architecture as decorative art, and there-

fore excludes from the department all rough walls, military buildings, bridges, and other structures which have not decorations. If this is a correct definition, all pre-historic works, whether in America or other countries, would be excluded except the most advanced, and, in fact, many of the modern structures, especially those devoted to commerce. He includes, however, the ruins of Greek cities, such as Tyrins. Mycenal, as he maintains that the first was a castle which contained a series of halls decorated with columns. The latter was a tomb or treasure house, the entrance to which was through the famous "Lion's-Gate," a model of early decoration. He maintains that the early Greek buildings were devoted to the divinities of Greek mythology, and holds that they were shrines, rather than temples, as the interiors were very small, and in them altars of incense were kept burning, but the religious ceremonies were observed in the open air.

It is to be noticed here that the temples in America were also shrines, as all religious observances were practiced in the open air. The only ceremonies of initiation and the rites of the secret societies were observed in the Estufas, which were places of assembly for men. In Greece the temples were composed of a Cella, which was attended with a pronaos and épinaos, these terms being very suggestive of the ship or boat which in Egypt was used to carry the Sacred Ark, or shrine. In some of the temples there were two rows of columns, one above the other, resembling, in this respect, the temple at Kabab. and elsewhere in Central America. The columns were at first plain shafts, with capitol and base in the Doric style, afterward the Ionic capital was introduced.

The great temple at Ephesus, and all on the western coast of Asia Minor were Ionic. Absalom's tomb at Jerusalem was a mixed style, as was the monument of Lysikratis. The Corinthian style appeared in the columns at Baalbec and at Palmyra, where the columns were arranged in rows and formed streets and colonades, which were used for walking in. The Forum of Augustus and Vespasian were furnished with open porticos, but there were temples resembling those of Egypt, furnished with peristyle facing inward, with high walls and colonades surrounding an immense court.

The temple of Solomon is supposed to have been built in this style. Sacred enclosures were common; the temple at Olympia was a good specimen, but the buildings were irregularly placed. Picturesque sites were chosen for temples, as is shown by the Acropolis, Erectheun and the Parthenon. Greek dwelling houses were very simple, and were without windows or chimneys. The decorations were kept for the courts within, while without there were only bare walls.

The styles that followed the Greek were the Roman, Romanesque and the Byzantine, "the first economical and cheap, the last more elaborate."

Columns and arches were used at Rome, but there was no new order or style introduced.

The arch of Trajan 114 A. D. of St. Chumas, near Arles, France, 218 A. D., the arch of Constantine, 318 A. D., the Palace of Diocletian, were specimens.

The early Christian churches embodied the Romanesque style, though the Byzantine style, became the favorite, as the vaulting was used with the greatest freedom and variety. In this, domes and half domes and cupola

vaults were common. Out of this habit of vaulting, the Gothic style arose. This is distinguished from the Norman style, as the masonry work was very light while the Norman was heavy and massive. The Gothic style originated in France about the year 1160 A. D.

Flying buttresses were introduced with the Norman.

The Gothic style was introduced into Spain, England and Germany between the years 1320 and 1420, and becomes almost national.

The style introduced between 1420 and 1520 was flamboyant. Moreover, a great number of statues of life size, and pointed windows, and minarets were introduced.

The Epic of the Fall of Man. A Comparative Study of Cædmon, Dante and Milton. By F. Humphreys Guerten Jr., H. L. L. D. New York and London. G. P. Putnam's Sons.—1896.

One of the most interesting exercises for the student of ancient and modern literature is to take the poets of the different times and nationalities and see how many figures and thoughts have been transmitted from one to the other. In this way it will be discovered that there is a transmission of certain very striking figures from Homer through Virgil and Tasso, and the mediæval poets down to the days of Elizabeth.

The same is true of the English poets, but in a greater degree, for there is scarcely one of them in which the signs of transmitted thought may not be recognized.

The best illustration of this, however, will be found in the three poets which are referred to and quoted from in this volume.

In this there is a comparison between the poems of Cædmon, Dante and Milton, especially in regard to the "Story of the Fall of Man," a comparison which shows not only the tenacity of the traditional view, but the staying power, also, of the imagery and poetical conceptions. The author begins with the poem of Beowulf, which he calls the grand relic of the "heroic age" in England.

He then refers to the life of Cædmon, and the sudden revelation of his high poetical powers. He shows that the poem belongs to the early days of Anglo Saxon Christianity—the days when monasteries were so numerous. Cædmon's poem has been called a scripture paraphrase, but this author maintains that while it is a narrative based on Hebrew mythology and Bible hints, it is full of ecclesiastic imaginings. It is not a story of our planet alone, nor even of "the whole starry universe," but like Milton's poem, has relation "to an eternal and unknown infinity." The first thought that interests, is the division of the universe into three spaces; first, heaven, the empyrean chaos, or the abyss, and hell. This is illustrated by the figures or plates which are fac-similes of the illuminations of the manuscript, published in the *Archæologia* of the Society of Antiquaries of London. In them we find the "Creator" has the human form, but is surrounded by angels furnished with many wings occupying the upper spaces. These same angels are seen falling through the middle space, with their wings reversed. But in the lower space the angels have turned to devils. A quaint conception is shown by the pictures, for the lower space is represented as separated from the upper by the open jaws of a monstrous fish, which swallows up the angels and turns them into devils. Milton's description of Satan "prowling around the circumference of the Universe in search of a place of entrance," is not found in Cædmon, but

nevertheless presents peculiar astronomical ideas, which correspond with the old Ptolemaic system more than with the modern view.

The conception that the serpent was able to stand erect is illustrated by the plates—a conception which was retained down to Milton's time.

There is, however, in *Cædmon* the picture of Satan appearing as an angel of light, showing that the "temptation" is planned on a far higher moral level in *Cædmon* than in Milton; for in Milton the "arch-fiend" haunts the "tree of knowledge," or the prohibited tree, and appeals to the base passions, while in *Cædmon* he appears as a messenger from God, and requires obedience.

To the Archæologist the plates are suggestive, for they show that "wings" were applied to angels in the earliest days of English poetry, and convey the idea that they are supernatural beings exactly as the wings do in American mythology and symbolism. The three spaces, however, are in contrast to the four or six which are always represented in the American.

It is a question, however, whether the traditional view of "heaven," "chaos" and "hell," came from scripture. The view certainly was more prevalent in mediæval poetry than in scripture language, though very similar conceptions may be recognized in the ancient mythology of the Assyrians and Babylonians. In fact, we are carried back to the struggle between Marduk and Tiamat, the monsters against which "magic" was in ancient times a defense.

The book shows one thing, while the traditional view may be transmitted to the present time, yet it is wonderfully modified, for no modern poet would use the same imagery.

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